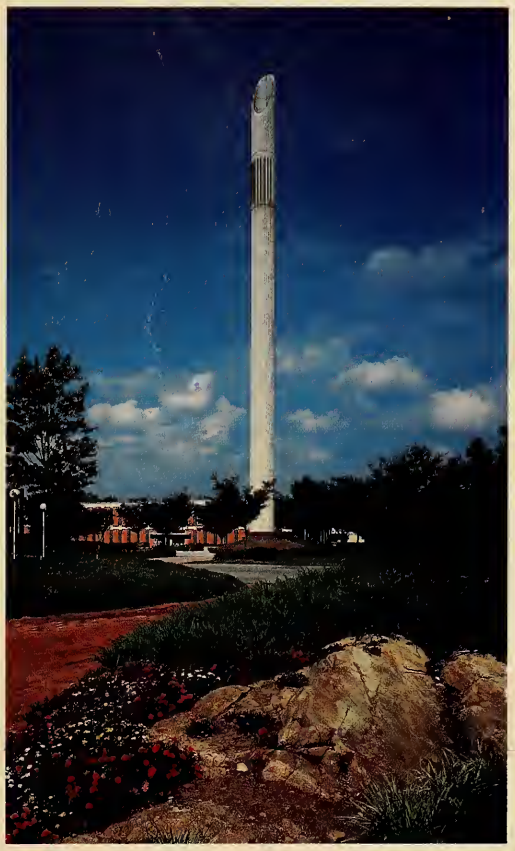
UNC CHARLOTTE



THE UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

1991 - 93

Undergraduate & Graduate Catalog

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About This Catalog...

Although the publisher of this catalog has made every reasonable effort to attain factual accuracy herein, no responsibility is assumed for editorial, clerical or printing errors, or errors occasioned by mistakes. The publisher has attempted to present information which, at the time of preparation for printing, most accurately describes the course offerings, faculty listings, policies, procedures, regulations and requirements of The University. However, it does not establish contractual relations. The University reserves the right to alter or change any statement contained herein without prior notice.

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The University of North Carolina at Charlotte

Undergraduate and Graduate Catalog 1991-1993

Vol. XXIII, No. I

The University of North Carolina at Charlotte is committed to equality of educational opportunity and does not discriminate against applicants, students or employees based on race, color, national origin, religion, sex, sexual orientation, age, or handicap. Moreover, the University of North Carolina at Charlotte is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of black students.

Correspondence Directory

If, after reading this *Catalog,* you have further questions or wish to make specific inquiries about the programs of, or admission to, The University of North Carolina at Charlotte, please look below to find the proper office to contact. Address correspondence to any of the offices in care of:

The University of North Carolina at Charlotte
Charlotte, North Carolina 28223

Academic Affairs 547-2225
Admissions
Undergraduate/Graduate 547-2213
Auxiliary Services 547-2138
Brocker Health Center 547-4624
College of
Architecture 547-2358
Arts & Sciences 547-4303
Business Administration 547-4304
Education and Allied
Professions 547-4707
Engineering 547-2301
Nursing 547-4650
Cone University Center 547-2267
Continuing Education
and Extension 547-2424
Cooperative Education 547-2361
Counseling Center 547-2105
Dean of Students 547-2375
Educational Support Services 547-4759
Enrollment Services 547-2045
Financial Aid 547-2461
Financial Services 547-2236
Graduate School 547-4850
J. Murrey Atkins Library
Circulation 547-2392
Reference 547-2241
Records/Registration 547-2287
Residence Life 547-2585
Student Affairs 547-2206
Summer Programs 547-2216

EMERGENCY NUMBERS

Campus Police — Emergency .....911 (on campus)
547-2200 (off campus)
Director of Public Safety & Non-Emergency Calls 547-2282
Health Services (radio contact with police) 547-4617
Campus Operator 547-2000
Mecklenburg County Police — Emergency 7-911

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Academic Calendar 1991-1993

Dates pertaining to changes in enrollment and refunds are included in the calendars that appear in the *Schedule of Courses* published each semester. These dates, and a detailed calendar for the three-, five- and eight-week terms of the summer sessions, are published during March.

FALL SEMESTER, 1991

Academic year begins ..... Friday, August 16
Orientation, advising, registration ..... Monday-Tuesday, August 19-20
First class day ..... Wednesday, August 21
Labor Day (no classes) ..... Monday, September 2
Fall recess (no classes) ..... Monday-Tuesday, October 10-11
Thanksgiving recess (no classes) ..... Wednesday-Friday, November 27-29
Last class day ..... Friday, December 6
Final examinations ..... Monday-Saturday, December 9-14

SPRING SEMESTER, 1992

Orientation, advising, registration ..... Monday-Tuesday, January 6-7
First class day ..... Wednesday, January 8
Martin Luther King Day (no classes) ..... Monday, January 20
Spring recess (no classes) ..... Monday-Friday, March 9-13
Last class day ..... Friday, April 24
Final examinations ..... Monday-Saturday, April 27-May 2
Commencement ..... Saturday, May 9
Academic year ends ..... Friday, May 15

FIRST SUMMER TERM, 1992

Registration ..... Monday, May 25
First class day ..... Tuesday, May 26
Last class day ..... Monday, June 29
Final examinations ..... Tuesday-Wednesday, June 30-July 1

SECOND SUMMER TERM, 1992

Registration ..... Monday, July 6
First class day ..... Tuesday, July 7
Last class day ..... Monday, August 10
Final examinations ..... Tuesday-Wednesday, August 11-12

FALL SEMESTER, 1992

Academic year begins ..... Sunday, August 16
Orientation, advising, registration ..... Monday-Tuesday, August 24-25
First class day ..... Wednesday, August 6
Labor Day (no classes) ..... Monday, September 7
Fall recess (no classes) ..... Monday-Tuesday, October 15-16
Thanksgiving recess (no classes) ..... Wednesday-Friday, November 25-27
Last class day ..... Friday, December 11
Final examinations ..... Monday-Saturday, December 14-19

SPRING SEMESTER, 1993

Orientation, advising, registration ..... Monday-Tuesday, January 11-12
First class day ..... Wednesday, January 13
Martin Luther King Day (no classes) ..... Monday, January 18
Spring recess (no classes) ..... Monday-Friday, March 15-19
Last class day ..... Friday, April 30
Final examinations ..... Monday-Saturday, May 3-8
Commencement ..... Saturday, May 15
Academic year ends ..... Saturday, May 15

FIRST SUMMER TERM, 1993

Registration ..... Tuesday, May 25
First class day ..... Wednesday, May 26
Last class day ..... Tuesday, June 29
Final examinations ..... Wednesday-Thursday, June 30-July 1

SECOND SUMMER TERM, 1993

Registration ..... Tuesday, July 6
First class day ..... Wednesday, July 7
Last class day ..... Tuesday, August 10
Final examinations ..... Wednesday-Thursday, August 11-12

The University

GENERAL INFORMATION

The University of North Carolina at Charlotte is an accredited state university which offers the opportunities of a comprehensive university while maintaining the intimacy of a small school. Enrollment, which now tops 14,000, is expected to continue its modest, yet steady, growth. This growth is attributed in part, to the University's dynamic setting in a metropolitan area of more than 1.1 million people, as well as to increasing national attention.

UNCC provides a wide range of four-year degree programs and an increasing number of master's degrees and sixth-year programs designed to serve the educational needs of the citizens of North Carolina. A number of programs, including graduate studies, are offered in the evening.

The University's enhanced reputation for high-quality teaching by regular faculty in classes of moderate size is bringing increasing numbers of students from across the state, from other states and from foreign countries. With a large concentration of foreign students, UNCC has one of the most active international studies programs in the country for an institution of its size.

A wide variety of lifelong learning opportunities is offered through UNCC's Continuing Education and Extension Office. Moreover, The University is dedicated to serving the urban community through its Urban Institute. It is related to the electronics and other firms in the adjoining University Research Park in a mutually-beneficial arrangement and is one of five participating universities comprising the Microelectronics Center of North Carolina (MCNC). A new Applied Research Center facilitates service to the research and business communities by housing the applied units of the colleges of Business Administration and Engineering and the Urban Institute. The Applied Research Program in Electro-optics is the first major program served by this facility. WFAE-FM, a National Public Radio affiliate, provides further outreach to the community.

Despite its metropolitan setting, the campus covers approximately 1,000 acres of rolling hills with forests, streams and ponds. Contemporary buildings of unique design and landscaping are clustered at the central campus which is easily accessible from major interstates and other highways. The setting is enhanced by a planned community, University City, which comprises The University, University Place, University Research Park and University Hospital, adjacent to the campus.

A team comprised of the chancellor, four vice chancellors and six deans gives leadership to The University and its six colleges — Architecture, Arts and Sciences, Business Administration, Engineering, Education and Allied Professions, and Nursing.

PURPOSE STATEMENT

The University of North Carolina at Charlotte is the distinctively urban-oriented university of the state. It provides instructional, research and public service programs primarily to meet the educational needs of the citizens of North Carolina, and welcomes participation by scholars and students from other states and nations. As a comprehensive university with developing doctoral programs, it is committed to a balanced curriculum in the liberal arts and sciences and selected professions. The University meets its responsibilities through campus programs and collaborative relationships with the human service, cultural, corporate and governmental resources of the region.

The University offers baccalaureate, master's and, currently in cooperation with more senior institutions of the state, doctoral programs. Undergraduate programs are offered in the humanities, social and behavioral sciences, physical and biological sciences and the professions of architecture, business administration, education, engineering and nursing. Graduate and professional programs are offered in selected areas and those which serve the population of the metropolitan region are given special emphasis.

The primary commitment of The University is to informed and effective teaching. All faculties emphasize undergraduate instruction as the foundation upon which lifelong learning and advanced education are based and extend educational services by offering programs in the evening hours and at off-campus sites.

The distinctive responsibilities of The University influence the nature of the research and the types of scholarly endeavor and public service activity undertaken by its faculty members. While both basic and applied research and scholarship are valued and encouraged, applied research is emphasized. Leadership in public service is provided through campus-based programs, consultation services, and cooperative efforts with regional, national and international organizations.

The University is committed to excellence in its teaching, research and public service programs and the relationships which support and are supported by them. The policies and practices of The University are designed to promote in each of its members:

- attitudes and opportunities for creative, critical and independent inquiry;
- high standards for the acquisition of knowledge and the achievement of intellectual understanding;
- freedom from the limitations of ignorance, prejudice and intolerance;
- self-knowledge and an understanding of the relationships of the individual to society; and
- understanding of cultures and circumstances that differ from the familiar in location, time or values.

GOALS STATEMENT

The University of North Carolina at Charlotte has as its strategic goal to be and to be known to be *The* University for the Charlotte region, providing intellectual resources and leadership for the educational, economic, social and cultural advancement of the peoples of North Carolina.

To progress toward this strategic goal, The University will direct its attention for the period 1991-92 through 1995-96 to each of the following five goals:

1. To strengthen the instructional systems of The University;
2. To support efforts by the faculty of The University to improve the quality and effectiveness of their teaching, research and service contributions;
3. To improve the operation and management of the academic programs of the campus;
4. To strengthen and expand relationships with other educational, cultural, industrial-commercial, health, and social service institutions of the Charlotte region and of the State of North Carolina; and
5. To strengthen the full range of liberal arts and sciences and the professional disciplines of The University with special emphasis on the development, extension and improvement of the applied social science and natural science programs and the education of prospective elementary and secondary school teachers.

GOALS OF UNCC EDUCATION

Graduates of The University of North Carolina at Charlotte should be self-motivated individuals who are able to form, articulate and act upon reasoned decisions in their personal, civic and professional lives. To this end they should (a) have a broad knowledge base as well as a more specialized knowledge base in their chosen area, (b) possess skills and capacities that can be applied to a variety of situations and professions in an ever-changing world, (c) understand the complexities and interrelationships between humans and their environment, and (d) possess a realistic understanding of their own potentials, limitations and mental/physical development. All UNCC graduates should possess a general understanding of and appreciation for science and technology; literature and the arts; the individual, society, and culture; and the interrelationships among these.

In order to meet these goals of UNCC education, students engage in programs designed to develop understandings, skills and capacities in the following six interrelated major areas:

I. Communication
II. Problem Solving
III. Understanding Values
IV. Understanding Science and Technology
V. Understanding the Arts, Literature and Ideas
VI. Understanding the Individual, Society and Culture

ACCREDITATION

UNC Charlotte is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award bachelor's, master's and specialist degrees. The University is a member of the North Carolina Association of Colleges and Universities and various programs are accredited by specialized accrediting agencies. The College of Architecture is accredited by the National Architectural Accrediting Board. The programs in business and accounting are accredited by the American Assembly of Collegiate Schools of Business. The program for teacher education is approved for teacher certification by the North Carolina State Department of Public Instruction and is accredited by the National Council for Accreditation of Teacher Education. Programs within the College of Engineering are accredited by the Accreditation Board for Engineering and Technology. The Nursing programs are accredited by the National League for Nursing and approved by the North Carolina Board of Nursing. The Department of Chemistry is on the approved list of the American Chemical Society.

The University is a member of the Council of Graduate Schools in the United States and the Conference of Southern Graduate Schools.

ACADEMIC STRUCTURE

UNCC is organized into four administrative divisions: Academic Affairs, Business Affairs, Development and Public Service, and Student Affairs. The Division of Academic Affairs includes the Library, Computing Services, Educational Support Services, Enrollment Services, the Office of Continuing Education and Extension, the Center for International Studies, the Graduate School and six colleges, the Colleges of Architecture, Arts and Sciences, Business Administration, Engineering, Education and Allied Professions, and Nursing. The colleges offer more than 60 undergraduate and 40 master's degree options and sixth-year Certificate of Advanced Study programs through the departments and programs listed by college in the *Courses of Study and Special Programs* section of this *Catalog*. Many of the departments throughout The University are involved in teacher education. The College of Education and Allied Professions, advised by the University Teacher Education Committee, is responsible for these programs.

EVENING COURSES

The University schedules its course offerings from 8 a.m. through 10:30 p.m. Monday through Thursday and 8 a.m. through 5 p.m. on Friday. A well-rounded selection of courses is available in the evening. A substantial majority of courses approved for graduate credit are taught in the evening. Course descriptions indicate courses expected to be offered in the evening during the period of this *Catalog*. **A schedule of evening course offerings may be obtained from the Registrar.**

SUMMER COURSES

UNCC schedules a variety of course offerings during its Summer Sessions which are held each year beginning in May and ending in mid-August. These courses are scheduled in two five-week terms and overlapping three- and eight-week terms. A special session is offered for teachers and other school personnel. Regular course offerings are supplemented by short-term courses, institutes and workshops. Continuing students, visitors or students from the community should find their needs answered by offerings from many disciplines. Information about summer courses may be obtained from the *Office of Admissions.*

PRIVACY OF STUDENT EDUCATIONAL RECORDS

Federal law (the "Buckley Amendment") creates for students the following rights with respect to their education records:

1. To inspect and review information contained in records.
2. To challenge the content of the records.
3. To a hearing if the outcome of the challenge is unsatisfactory to the student.
4. To submit an explanatory statement for inclusion in the record if the outcome of the hearing is unsatisfactory.
5. To prevent disclosure, with certain exceptions, of personally identifiable information.
6. To secure a copy of the UNCC policy on education records, which lists the locations of all education records maintained by The University.
7. To file complaints with the U.S. Department of Education concerning alleged failures by the institution to comply with the Buckley Amendment.

UNCC intends to comply fully with those requirements. Policy Statement No. 69, "The Privacy of Educational Records," explains the procedures for compliance. Students may obtain copies of the Policy in the Office of the Registrar, and copies of the Policy Statement are available for inspection in the offices of each dean and department chairperson. The Policy includes a list of the locations of all education records maintained by the institution.

The following categories of personally identifiable information about students have been designated as public or "directory" information which may be disclosed for any purpose without student consent: name, local and permanent address, telephone number, date and place of birth, major field of study, dates of attendance, degrees and awards (including scholarships) received, participation in officially recognized activities and sports, and weight and height of members of an athletic team.

Currently enrolled students may withhold disclosure of information in any category by completing the appropriate form available in the Office of the Registrar. Written requests for nondisclosure will be honored for a maximum of one year, and all such requests will expire on the following August 31. *UNCC assumes that failure to complete the request indicates approval for disclosure.*

All questions concerning this UNCC policy on educational records may be directed to the attention of the Director of Enrollment Services.

EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION

The University of North Carolina at Charlotte is dedicated to equal opportunity through affirmative action within the University community. The University's affirmative action program is designed to provide equal consideration of all applicants for faculty and staff positions, for all faculty members in the tenure and promotion process, for administrators and other staff members seeking promotions and upgrades, as well as for students seeking admission, financial aid, and equality in academic and athletic programs.

In keeping with this policy, faculty and staff are recruited, hired, and promoted without regard to race, color, religion, sex, national origin, age, sexual orientation, or any nonrelevant handicap. The University actively recruits students from protected categories and provides opportunities for the growth and development of these students.

The University's Affirmative Action Program was established in 1973 and includes the monitoring and reporting of compliance with applicable laws and regulations including Titles VI and VII of the Civil Rights Act of 1964, as amended; Executive Order 11246, as amended by Executive Order 11375; Revised Order No. 4; the Equal Pay Act of 1963, as amended; the Rehabilitation

Act of 1973 as amended; the Vietnam Era Veteran's Rehabilitation Act of 1974; Titles VII and VIII of the Public Health Service Action; Title IX of the Education Amendments of 1972; and all applicable laws and ordinances of the State of North Carolina. The University has a published Affirmative Action Plan, copies of which have been distributed to all departments and offices. Copies have also been placed on reserve in the Library.

The Director of Personnel serves as the Affirmative Action officer and is responsible for ensuring that the University's commitments are met. Contact the Director of Personnel, Reese 3rd Floor, (704) 547-4269.

Discriminatory Personal Conduct. The University seeks to promote a fair, humane and respectful environment for its faculty, staff and students. To that end, University policy explicitly prohibits sexual harassment, racial harassment, and all other personal conduct which inappropriately asserts that sex, race, ethnicity, or ancestry are relevant to consideration of individual worth or individual performance. The same policies provide procedures for the informal or formal resolution of instances where such behavior is suspected or alleged. The policies have received wide distribution and are available for inspection in all administrative offices on campus.

Facilities and Services

THE CAMPUS

The campus is located off Harris Boulevard on NC 49 near its intersection with US 29, and only eight miles from the interchange of Interstates 85 and 77. Campus facilities are comprised of air-conditioned contemporary buildings. In addition to classrooms and well-equipped laboratories, The University offers outstanding arts and athletic facilities, cafeterias and residence accommodations. The campus is designed for the pedestrian and all facilities are generally accessible to students with disabilities.

A map of the campus is included on the inside back cover of this *Catalog*. The Reese Building houses many administrative offices, including Admissions and the Registrar's Office.

Parking and Traffic is the responsibility of the Traffic Office, located in the King Building. All persons desiring to park motor vehicles on campus are required to purchase and display a University parking permit. Permits designate specific parking areas, depending upon the individual's classification as student, faculty or staff. Night decals are available by the semester and are valid in any non-metered or reserved lot after 4 p.m. Persons with a night permit must pay to park at meters or visitors' decks between 8 a.m. and 4 p.m. Presentation of state vehicle registration or appropriate proof of ownership is required to obtain a permit. Permits do not guarantee a space will be available nor do they reserve a specific space, except in the case of handicapped individuals. Parking meters and visitors' decks are available for visitors on campus. Temporary permits are available from the Traffic Office for new employees, guests, and for vehicles being used while a registered vehicle is being repaired and/or other valid reasons for a period not to exceed two weeks. Abbreviated copies of the *Campus Traffic and Parking Regulations* are available from the Traffic Office for the asking or when purchasing a permit. For information on fees for motor vehicle registration and parking, see the chapter *Financial Information.*

The Charlotte Transit System provides bus transportation from the Square in uptown Charlotte and from Southpark Shopping Center (via Eastland Mall and the apartment complexes along Barrington Drive). Service is provided on a regular schedule connecting with established routes throughout the city. Detailed information regarding routes, schedules and TRAC passes may be obtained in the Traffic Office, 134 King Building. Fees are set by Charlotte Transit and are subject to change.

Public Safety services to the University community are provided 24 hours a day, seven days a week. Campus Police Officers are sworn, certified law enforcement officers. Campus Rangers serve in a support role, providing services to the community and additional patrol.

The Department of Public Safety's primary responsibilities include crime prevention, enforcement of laws and regulations, protection of life and property, preservation of peace and apprehension of criminals. In addition to 24 hour patrol capabilities, the Department includes Criminal Investigations, Records and Communications, Lost and Found, and Crime Prevention.

Emergency telephones are located throughout the campus and are identified by "blue lights." The Department of Public Safety is located in room 113, King Building.

Safety Services and Accident Prevention are the concerns of the Safety Office in the Department of Personnel. It is the responsibility of the Safety Office to investigate accidents on campus, conduct

safety inspections of all buildings, maintain all reports required by the N.C. Department of Labor and generally work to reduce the risks of illness or injury in the University community.

EDUCATIONAL SERVICES AND FACILITIES

The J. Murrey Atkins Library, located near the center of the campus, houses an open-shelf collection which includes over 490,000 bound volumes, 985,000 units in microform and approximately 800,000 manuscripts in closed stacks. The Library of Congress classification system is used for the arrangement of books and periodicals, and an online catalog provides access to a substantial portion of the collection.

Atkins Library meets the informational needs of the University community by offering a variety of services. A staff of 85 people, including 28 librarians, acquires, organizes and services the collections. Reference librarians provide assistance to users in locating information and in the use of library. The reference staff also offers an active library instruction program which reaches numerous University classes, and a computerized reference service which provides access to hundreds of remote databases. Interlibrary Loan provides access to materials that are not contained in the Library's collection.

A number of special collections are available. A selective depository of U.S. publications since 1964, Atkins Library has over 525,000 federal government documents. The North Carolina documents collection, begun in 1976, is a rapidly growing collection of publications of state government agencies. In 1984 the Library was designated a depository for City of Charlotte and Mecklenburg County publications. The Local Public Documents Room Collection for the McGuire Nuclear Plant on Lake Norman is located in the Library. Atkins Library is also a depository of U.S. Geological Survey and Defense Mapping Agency maps. The collection consists of over 36,000 maps.

The Mary and Harry L. Dalton Rare Book and Manuscript Reading Room houses collections of rare books, official University records, historical manuscripts, and oral history tapes. The Rare Book Collection, numbering some 4,856 volumes, contains literary first editions, historical children's books, fine press books, and more than 1,000 English plays of the 17th, 18th, and early 19th centuries. The University Archives includes administrative files, theses, photographs and other material relating to the history of The University. The manuscript collections document the contemporary social, political and architectural history of the Metrolina region.

Other collections include audio-visual software and the Curriculum and Instructional Materials Center which contains K-12 teacher education materials. Atkins Library is a Teacher Resource Center for select NASA educational materials.

The Friends of UNCC and individual donors have played a significant role in developing and contributing to the growth of the Library's collections.

Media Services, administered by the Library, is located in Atkins 200. It offers a wide range of audio and visual services for both students and faculty engaged in University functions. The production staff is capable of producing color slides, overhead transparencies, black and white photographs, audio and video recordings and multi-media programs.

Media Services loans audio-visual equipment for short-term use to students and faculty. Equipment includes motion picture projectors, slides and filmstrip projectors, overhead and opaque projectors, audio and video recorders, public address systems, record players and projector screens. There is a satellite equipment distribution center located in Denny 214. An audio studio and small television studio are available for use. The unit also manages a highly sophisticated teleconference and teleclassroom facility in conjunction with the Microelectronics Center of North Carolina. Professional assistance is available on request. The Library's collection of 16mm films is located in Media Services. The unit manages the film preview program and handles requests for loans from the State's film-lending service. The staff offers a wide variety of workshops on television production, slide duplication, dry mounting, laminating, thermal and diazo transparency production, projector operation, audio and video tape recording and instructional development.

Computing Services supports The University's instructional and research computing activities as well as providing administrative computing in the operation of The University. Academic Computing includes course programs at the undergraduate and graduate levels in the use of various computer techniques and languages as well as research at the graduate level involving the use of an extensive software library. Computing laboratories located in several campus buildings provide

access to a variety of microcomputers and workstations. Access is provided to the University's mainframes and superminicomputers via a campus Local Area Network. Access to the J. Murrey Atkins Library Aladdin System and to the Microelectronics Center of North Carolina (MCNC) superminicomputers, the North Carolina Supercomputer Center (NCSC), the NSF Supercomputer network (NSFnet) and Bitnet provides additional computing capacity, software and databases.

Educational Support Services

Educational Support Services promotes programs, services and activities designed to support and enhance the educational experience of students.

Learning Center. Provides academic support services to students, faculty and staff. The Learning Center, located in Atkins Annex 24, is open a minimum of Monday through Friday from 8 a.m. to 5 p.m. Facilities include a large, well-equipped learning laboratory with resources and materials for learning skill development in such areas as time management, vocabulary development, critical thinking and problem solving, listening and notetaking, concentration and memory, and test-taking.

Services include, but are not limited to the following: (1) computer-assisted and/or programmed instruction; (2) individual academic counseling and learning skills development; (3) diagnostic assessment of learning skills and learning styles; (4) workshops on learning skills (offered in various campus locations and in the residence life areas); (5) assistance for international students learning English; (6) preparation for graduate and professional examinations; (7) study hall facilities; (8) basic skills review (mathematics, reading comprehension); (9) academic assistance for reentering students; (10) efficient (speed) reading programs; and (11) assistance with test, math, and speech anxiety management.

Tutorial Services (Kennedy 312). Free peer tutoring is offered in the areas of math, sciences, and foreign languages. Trained upperclass undergraduates tutor students individually and in scheduled sessions. Computer-assisted instruction and videos are available for reinforcing classroom learning in math and other courses.

Supplemental Instruction, located in Colvard 2062 B and D, is a program designed to help students succeed in introductory courses that are "high risk." A "high risk" course is one in which 33 percent or more of the students receive a *D* or *F* or withdraw. Peer tutors meet with students several times weekly to learn course content and study skills needed for the specific course. Consult the professor to learn if the introductory biology, chemistry, psychology or physics course has an SI component.

Disabled Student Services, located in Winningham 105, provides special assistance in study techniques, transcribing, taped textbooks, special test administration, academic counseling, interpreting and other individual support services for students with a learning, sensory or physical disability.

Pre-admissions counseling is encouraged. All students with impaired sensory, manual, or speaking skills requiring assistance should contact the Office of Disabled Student Services as early as possible to discuss University capability to meet their needs. Every effort will be made to accommodate special requirements as necessary or feasible. The Office shall work with the student in locating necessary educational auxiliary aids. The University shall not assume any responsibility for the provision of attendants, individually prescribed devices, readers for personal use or study, or any device or service of a personal nature. The arrangements for these types of services are entirely the responsibility of the individual student and should be established well in advance of the time such services are to begin. To contact Disabled Student Services, telephone 547-4354 (voice/TDD).

Students with disabilities needing parking permits or special public transportation should contact the Department of Public Safety located in 134 King building.

Housing facilities designed specifically for students in wheelchairs are available. Please see the information listed in the section *University residence halls, suites and apartments* for further information. Participation in the Disabled Student Services program does not guarantee assignment to residence facilities.

Students who have grievances related to The University's delivery of services for disabled persons should process the grievance in accordance with procedures on file in the Office of Disabled Student Services.

Writing Resources Center (WRC), located in Denny 217, is a service provided by the English Department to help students and other members of the University community improve their writing skills. The WRC is staffed by graduate and undergraduate tutors prepared to help the individual learn prewriting strategies, understand the writing process, develop a thesis, strengthen the focus of a paper, create effective introductions and conclusions, revise drafts, identify and correct grammatical errors, and recognize strengths and needs. The WRC provides one-on-one tutoring; small group workshops focusing on specific topics; reference books, handbooks and professional writing texts which may be checked out; a Macintosh computer lab for student use; computer-assisted instruction; worksheets and exercises for individual instruction concentrated on grammatical problems; and resume-writing guidelines. The WRC is open Monday through Thursday 9:00 a.m. to 9:00 p.m., and from 9:00 a.m. to 2:00 p.m. on Friday.

Center for International Studies

The Center for International Studies offers a diversity of academic and cultural programs to enhance the learning experience of the University community. A minor in International Studies allows students to pursue an interdisciplinary and comparative study of foreign cultures and societies while they fulfill the academic requirements for a major in one of the approved University degree programs. (See page 301 for complete information.)

Study and Travel Abroad. UNCC encourages its students to choose the opportunity to study and live in a foreign country as a part of their undergraduate career. The Center for International Studies offers UNCC students the opportunity to study and travel abroad for a year, a semester or a summer. Programs are available in countries virtually all over the world. Deadlines for application for fall semester or year-long programs are usually in January or February, deadlines for spring semester programs are in September or October, and deadlines for summer programs are ususally in April. (See page 301 in *Courses of Study and Special Programs* for additional information on study abroad and student exchange opportunities.)

The Center also serves as a facilitator in the development of faculty exchange opportunities. Faculty are encouraged to work with the Center's staff in exploring and applying for a wide range of international exchanges. Among those are the Fulbright Exchange Program, reciprocal department exchanges, and exchanges based on agreements between UNCC and overseas institutions of higher learning. Faculty and administrators are also able to take advantage of the Center's professional development program. This program provides opportunities for the further enhancement of international interests through travel for international study and research and faculty colloquia on international topics.

International Student/Scholar Services are designed to respond to a diverse population having special needs in the areas of immigration, language, campus orientation, and cultural understanding. The focus of services include UNCC students and scholars, English Language Training Institute students, other international students, and faculty on immigrant visas. Major programs include orientation, individual assistance with academic and personal questions, immigration matters, and campus and community services.

Campus Programming. Various events are sponsored independently and in cooperation with other departments and agencies. They include the annual International Festival, dinners sponsored by the International Club, the Study Abroad Fair and Summer Institutes.

The English Language Training Institute (ELTI) provides intensive English instruction both for international students planning to attend American universities or colleges and for those individuals pursuing professional training in the United States. ELTI holds three sessions per year—fall, spring, and summer—and offers four language proficiency levels. Class size is limited to 15 students, and students attend class 20 hours per week. Exceptional students in Level 4 may take University courses which carry academic credit. For more information about the ELTI, contact the Program Director at the Center for International Studies.

Public Service. The Center seeks to initiate and respond to the international needs and interests of the community. Current programs include: (1) *Community Forums* — symposia on topics of current international interest; (2) *Great Decisions* — an annual series of lecture/discussions during the months of February and March on eight key policy issues; (3) *International Business Workshops* — programs focusing on specific aspects of international trade, e.g., letters of credit, customs regulations, international marketing, documentation, and foreign trade zone; (4) *Charlotte World Affairs Council;* (5) *Community-based Programs* having an international focus, such as the Host Family Programs for foreign students; and (6) service to individuals and community organizations for international information and program development.

The Chimney Rock Park Field Station is located in the Blue Ridge Mountains, 30 miles southeast of Asheville. The University has an agreement with Chimney Rock Park to investigate the biological, geological and cultural features of the 800-acre park. Area available for study extends from the Broad River at the bottom of Hickory Nut Gorge to the top, a vertical climb of over 1,500 feet.

The UNCC Experimental Ecological Reserve is a 100-acre tract of land set aside on campus by the UNCC Board of Trustees as a permanent ecological reserve for use as an outdoor classroom and laboratory. The reserve includes an eight-acre old field, pine stands, mixed pine-hardwood forest, and a relatively undisturbed 10-acre watershed of oak-hickory forest.

The UNCC Rocky River Wildlife Refuge is a 46-acre natural area located east of Charlotte in Stanly County. Its purpose is to preserve the natural features of the area and allow research and field trips to study the plants and animals within the North Carolina slate belt formation.

The UNCC Botanical Gardens, located on campus, consist of the McMillan Academic Greenhouse, the Van Landingham Rhododendron Glen, and the Susie Harwood Ornamentals Garden. Begun in 1966, these gardens combine indoor and outdoor facilities for teaching, research and public display of a wide variety of native and exotic plants.

STUDENT AFFAIRS

The University of North Carolina at Charlotte provides an environment for students that is conducive to study and the pursuit of knowledge as well as comfortable and enjoyable. A variety of services and facilities are offered to meet the needs of students.

The Bonnie E. Cone University Center serves as the hub of activity for informal gatherings and social and educational activities on campus and provides an attractive, comfortable place for relaxation and study. Services and facilities available include the Student Activities Center, art galleries, gameroom and outdoor equipment rental, information desk and music listening lounge, TV/Video Lounge, the Candy Shoppe and concert and discount movies tickets center, 24-Hour Program Hotline, NTN Channel 37, and meeting rooms and facilities for dances, lectures, concerts, films and banquets.

Also located within Cone University Center are the offices of the Student Body Government, *University Times, Sanskrit, Etc. Magazine,* Video Yearbook, Student Media Marketing, Black Student Union, University Program Board, Venture Program, Campus Programs, Student Activity Fees Clerk, Campus Event Information Office, I.D. Office, Food Service and the administrative offices (includes University Facility Reservations and Conference Services) for the University Center.

The I.D. Office is co-located with the Food Service Office in the cafeteria in Cone University Center. Hours are 8 a.m. to 5 p.m. Monday through Friday.

All students and faculty/staff are issued permanent-picture I.D. cards that are automatically revalidated by computer. Temporary and dependent I.D. cards also are available. Lost cards should be reported to the I.D. Office immediately at 547-2216. A $10 charge is made for replacement cards.

After Hours (Cone Center) and **The Rathskeller** (Residence Hall Cafeteria) can be reserved for dances and other events. The University Program Board (UPB) and Campus Programs offer a wide variety of entertainment including name musical and novelty acts, lectures, movies, minority programs, women's programs and children's programs.

The Bookstore offers new and used textbooks, non-required special interest and gift books, school supplies, computers and related equipment, greeting cards, gifts and clothing items. Services include sale and development of film and special ordering of books not carried in stock.

University residence halls, suites and apartments offer students an experience filled with opportunity. Four high-rise halls house approximately 500 students each. Each room includes study and sleeping areas for two students and is equipped with built-in dressers, study desks, chairs and closets. Each floor has a central lounge plus study, typing and seminar rooms. Two elevators service each air-conditioned building. Each building also contains an office for the full-time professional staff (residence coordinator), student mail boxes, a concessions area, a lounge and a laundry room. A meal plan is required with high-rise residence.

Suite housing offers the same potential for growth as the high-rise halls and provides more privacy. Two students share a double room and four students share a bath and a den area. This lifestyle also requires participation in a meal plan.

On-campus apartments offer an alternative to group living without the disadvantages and expense of commuting. They offer students a more private living environment and require a more self-reliant lifestyle. Each apartment is a four-bedroom unit, with one student assigned to each bedroom. The four students share a bathroom area and kitchen complete with cooking facilities and living/dining space. The apartments are designed to be as like the "outside world" as possible. A meal plan is optional, allowing students the experience of buying and preparing their own food, if they so desire. *(Note: freshmen are not eligible for the apartment lifestyle.)*

Several options are available for summer housing. For information on summer housing, contact the Residence Life Office.

The University does not require students to live on campus. A student who plans to live on campus should apply as soon as possible as assignments are made based on date of receipt of contract. An application for housing will be sent to the entering student following his or her final admission to The University. A $100 deposit must be returned with the application to the Director of Residence Life.

Housing facilities designed specifically for disabled students in wheelchairs are available. Wheelchair students who receive residence hall space confirmation have priority in assignment to these facilities *as long as The University is able to offer space.* It is extremely important that the housing application is received before all space is committed so that this priority for assignment to handicapped facilities can be exercised. Wheelchair students may be considered for priority status on the waiting list on the basis of (1) the date of application and (2) the degree of utilization of wheelchair-equipped facilities as compared to the proportion of wheelchair students who apply.

The University does not assume any responsibility for the provision of attendants for disabled students. Such arrangements are entirely the responsibility of the individual student and should be established well in advance of the time such services are to begin.

Food Service. Resident students living in Sanford, Moore, Holshouser, Scott, Hawthorn, Hickory, Cedar, Sycamore, Oak and Poplar *must* have a food service contract. Current options are for either the 21-meal, 14-meal, or the 10-meal plan. These students may take their meals at any of the boarding cafeterias. A dollar allowance is given for certain meals if the student wishes to eat in other food service facilities on campus and pay cash for anything over the established amount.

Resident students living in apartments (Phase I, II, III, V-A or VI) and commuter students may purchase any of the meal plans offered including a five-meal plan. Contact Auxiliary Services, 547-2138 for details.

Once a meal plan has been selected, *changes will be made only under the following conditions:*

1. A plan can be changed during the period of room change as announced by Residence Life or when a student moves from a required area to an optional area.
2. The student withdraws from The University.

Any exception to the above must be approved by the Director of Auxiliary Services and will result in a debt service charge. *Note:* All meal plan changes must be made in the Auxiliary Service Office, 101 King.

Anyone may purchase individual meals for cash at any of the boarding cafeterias. Vending machines are located throughout the campus, and several locations have microwave ovens for heating items.

The Counseling Center provides services and programs to assist in individual and group growth, career development and personal adjustment problems. Staffed by psychologists and counselors, the Counseling Center offers services to students, faculty and staff without cost. Initial counseling appointments may be arranged in Room 06 of the Atkins Building. Information between an individual and his/her counselor is confidential in accordance with State guidelines.

Individual counseling is provided to help a person develop better coping strategies, resolve conflict and handle crisis situations. Stress management is taught through bio feedback and other relaxation methods. Career counseling assists the person in exploring interests, work values and abilities through individual counseling sessions, career exploration groups and utilization of the Career Resource Library, and use of the SIGI Plus computer-assisted career guidance system. Each semester, groups are offered which are designed to teach a skill or are focused on a particular theme. The administration of career interest inventories, personality surveys and achievement tests provide an additional method of self-exploration for students. Tests are selected only after a careful discussion between the individual and the counselor and are available at no cost.

Outreach and consultations are vital functions of the Counseling Center. Staff members are available to consult with faculty, staff and student organizations on topics such as enhancing communication, improving the learning environment and helping the problem student. Outreach activities include programs conducted outside the Counseling Center to meet the needs of a group or organization. These programs usually focus on personal development, career development and educational skills training.

The Brocker Health Center provides a range of out-patient medical care to all students, with facilities for laboratory and X-ray studies, hearing and vision testing, allergy injections, injury rehabilitation and pharmacy services. Specialty clinics for dermatology, nutrition and orthopedics are also available.

During the academic year (late-August through early-May), the Health Center is fully operational between the hours of 8 a.m. and 5 p.m. with physicians and support staff on duty Monday through Friday. From 5 p.m. to 8 p.m., Monday through Thursday, registered nurses are available for assistance and referral. The Health Center is staffed by R.N.s on weekends from 1 p.m. to 5 p.m. and on some holidays. During the summer months, the Center is open from 8 a.m. to 5 p.m., Monday through Friday, with limited staffing.

Seriously ill students and emergencies will be referred to University Hospital or other appropriate in-patient facilities. Students and parents are urged to review their insurance plans to be sure they have adequate coverage for confinement or emergency treatment at these facilities. The University does not provide health insurance for students. For the convenience of students, information from one or more private insurance companies offering student-oriented health insurance plans is mailed to all students during the summer, however each student remains fully responsible for any health insurance plan selected.

Students coming to the Health Center must bring a current university identification card. The Student Health Fee covers most of the cost of Health Center services. Additional fees are charged for X-ray, pharmacy, lab and orthopedic services. Fees change from year to year. Call 547-4617 for further information.

The Center for Student Employment and Career Services functions as the central placement agency for the campus and serves undergraduates, graduate students and alumni by assisting them in developing their career objectives (preferably beginning with their admission to The University) and in obtaining employment. Services include career planning and guidance; advising on the techniques of employment prospecting, on job selection and analysis, on interviewing, on the preparation of resumes and writing of business letters; maintaining files of information on prospective employers (business firms, governmental agencies, school systems, and human resource agencies) and on graduate school fellowships and assistantships; and providing liaison between employers or graduate schools and UNCC degree candidates through on-campus recruiting by employers and graduate school representatives, and by individual referral of prospective graduates and alumni to current employment openings.

Students who wish to earn part of their educational expenses or gain work experience may register for part-time, full-time or summer employment off campus through the Center's Job Location and Development Program. Every effort is made to assist the student who expresses a need for employment and, where possible, to place the student in a position relating to his/her vocational goal. Students who prefer the convenience of working on campus may obtain positions in the Center's College Work Study program (CWSP). However, to be considered for CWSP, a student must be eligible to receive financial aid. Additionally, students can be employed on campus as student temporary wage employees and graduate and undergraduate student assistants.

Degree candidates register with the Center on a voluntary basis early in their graduating year by completing a data sheet authorization form and requesting three professors and/or employers to complete evaluations on forms provided by the Center. At the present time these credentials are retained for six years, provided the file is updated annually.

The Family Educational Rights and Privacy Act of 1974 provides that the release of placement credentials or information in a student's file must be authorized in writing by the registrant unless the information is a matter of public record, and that under certain conditions each student may have the right to review his/her placement file (data sheet and evaluations) and to obtain a copy of it for a minimal fee.

All employers and schools interviewing on campus or listing openings with the Center for Student Employment and Career Services must certify that they are equal opportunity employers, in areas that include hiring, compensation, promotion, training or admission, and that they do not discriminate on the basis of race, color, religion, sex, age, national origin or handicap.

Outreach: The University and the Community

The University touches the lives of area citizens through the involvement of its faculty and staff in many facets of community life: business, education, social services, cultural activities, historic preservation, science, literary endeavors and others. Recognizing that its mission extends beyond the campus classroom, The University sponsors a range of services and programs that benefit the community. The Division of Development and Public Service was created especially to coordinate these outreach programs. The Division also fosters community support to ensure UNC Charlotte's standards of excellence and provide programs, research opportunities and avenues for scholarly pursuits.

The Office of Academic Grants and Contracts has been established to inform and assist the University community in seeking grants, contracts and service agreements for funding research, training and other scholarly activities. The staff is available to consult with faculty and to assist in pre-award activities such as identification of sources, interpretation of guidelines, preparation of budgets and compliance with regulations. The Office also maintains a resource area consisting of grant guidelines, reference books and proposal preparation aids and provides limited word processing services to proposal writers.

The Office of Alumni Affairs is housed in the Colvard Building, and the Director of Alumni Affairs acts as the liaison officer between the graduates and The University. The graduate should notify the Alumni Office of address changes and significant events in his or her life, such as marriage, births, new positions and honors. In this way, adequate records can be maintained, and the Alumni Office can pass good news along to friends of the alumnus.

The General Alumni Association of The University of North Carolina at Charlotte is the recognized official alumni organization. Graduates of The University are encouraged to provide updated address and employment information so that The University may maintain lifelong contacts with each individual. Persons attending The University for one semester are eligible for membership in the General Alumni Association.

Membership can help the student maintain friendships of college days and obtain useful information from The University about programs and social activities. The General Alumni Association executes annual telefunds as part of the annual giving program and contributes to worthy projects for UNCC. Thus, the alumnus can support the Alma Mater in a useful and efficient way. A quarterly newspaper is provided to alumni, and group tours to vacation spots within the United States and abroad are organized.

The Alumni Association co-sponsors with UNCC the Commencement Reception for new graduates, parents, faculty and friends. Class reunions are held to honor the anniversary of various classes of graduates. Homecoming activities highlight the events of the year for alumni.

Regional chapters have been established in counties throughout the state to increase the involvement and interest of alumni throughout the state.

The Chancellor's Club provides alumni an opportunity to support academic excellence in higher education by establishing an endowment fund for the Alumni Scholarships for Merit program. The Alumni Scholarships for Merit are awarded annually to two students for outstanding academic performance while attending The University.

The Office of Continuing Education and Extension

Recognizing that learning must be a lifelong activity, The University provides opportunities for adults to pursue continuing education. These opportunities include degree-related studies as well as special short courses, seminars, conferences and workshops. Many of these opportunities are administered by the Office of Continuing Education and Extension.

Through *Extension,* courses for academic credit are offered at select off-campus sites to serve adults who live beyond commuting distance from Charlotte.

Short courses, seminars, workshops and conferences designed to keep adults current and productive are offered through *Continuing Education.* Specific programs are provided each year for the continuing professional education of accountants, managers in the public and private sectors, engineers, psychotherapists and counselors, teachers and other school personnel, information specialists and elected public officials. Special lectures and forums also are offered in the arts, sciences, humanities and public policy for the personal enrichment of all interested citizens.

Contact the Continuing Education and Extension office at 547-2424 for specific information about its programs.

The Office of Development, located in 1021 Colvard is responsible for coordination of University efforts to secure financial support from the private sector and to serve as the receiving point for gifts of dollars, securities, works of art, land and equipment.

Through the Foundation of The University of North Carolina at Charlotte, the General Alumni Association, Friends of UNCC, the Athletic Foundation and advisory boards, the various avenues of supporting The University are made known to individuals, corporations and foundations.

To achieve a superior standing, UNCC relies upon the private sector for funds not available through state appropriations. Contributors are encouraged to take advantage of the various and most favorable means of supporting The University. Included among these are cash gifts, charitable remainder trusts, annuity trusts, unitrusts, pooled life income funds, wills and bequests, insurance and matching gift programs.

The Parents Association of UNCC exists to involve all parents of UNCC students in University activities. Through regular communication and campus activities, parents achieve a close rapport with The University. The Association supports UNCC through financial means, good will and recruitment of students.

Additional information is available in the office of the Director for Development, UNCC, Charlotte, NC 28223; (704) 547-2271.

The Foundation of The University of North Carolina at Charlotte was founded in 1960 and has had from its inception the goal of undergirding The University and assisting it in the quest for excellence. To accomplish its goals, the Foundation invites private sources to contribute so that needs unmet, or inadequately provided for through state funds, may be met.

Through the 1988-89 academic year, the Directors of the UNCC Foundation have allocated more than $4 million to The University for salary supplements, faculty research, scholarships and special projects.

Patrons of Excellence is a program established by the Foundation of The University of North Carolina at Charlotte to provide exceptional support to The University. Under the program, Patrons pledge a minimum of $1,000 a year for 10 years or may make a donation of at least $10,000 at one time. Patrons of Excellence now number over 300. The Foundation continues to seek additional Patrons.

The Public Information and Publications Office, located in the Reese Building, is the official communications channel through which The University disseminates information to its various publics. The Office has three major functions: (1) external media relations, (2) internal communications and (3) official University publications which are distributed to off-campus audiences. The Office, as the official channel for dissemination of news and information to the mass media, distributes news and features stories about University programs and its people as well as hometown releases about achievements of students. A weekly newsletter called *Campus News* keeps faculty and staff informed about campus activities—items are accepted from employees on a space-available basis for distribution in the newsletter. In addition, the Office provides assistance in printing official publications for University departments. This includes assistance with writing or rewriting copy, writing printing specifications, obtaining design and layout services and seeking printers (on- and off-campus) according to state-required purchasing guidelines.

The University Forum provides a campus platform for outstanding national figures to examine key issues in depth. The University Forum Council, composed of representatives from the student body, faculty, administration and the community, sponsors the Forum each year. Usually held during the spring, the Forum was initiated in 1966.

The Urban Institute develops and supports programs which give impetus to the University's urban mission. Its programs are designed to meet the applied research needs of urban and developing areas. The Institute is a catalyst for programs which focus on the Charlotte Metro region. It also provides administrative and technical support to organizations involved with issues of an urbanizing society. Projects are initiated by members of the faculty, community clients or the Institute staff and focus on a broad spectrum of urban topics, e.g., local government, waste management, land use, small business assistance and economic development. Students may become involved in Institute projects as part-time research assistants or interviewers, or they may become involved with the Institute in conjunction with coursework or degree requirements by writing term papers, graduate theses, or completing internships. The Institute's program areas are:

Community Research and Service. Works with public agencies to resolve problems and provides administrative support for community organizations.

Public Information. Develops or publishes, in cooperation with other University units and clients, newsletters, books, economic atlases, urban profiles, on-going demographic reports, and directories.

Economic Development and Planning. Engages in research and planning for community, industrial and commercial development.

Southeast Waste Exchange. Promotes safe and cost-effective waste management and environmental protection.

University/Industry Cooperative Programs. Initiates and develops cooperative projects between the University and the private sector by acting as a catalyst and a broker in developing programs in close cooperation with other University units. Operates the Ben Craig Center and the Small Business and Technology Development Center located in University Research Park.

Institute For Transportation Research and Education. Assists local, state and federal agencies in meeting their transportation responsibilities.

Regional Information System. Computerized data bank for university and community researchers and planners.

The Mathematics and Science Education Center

The Center works closely with Region VI teachers and school administrators to provide in-service K-12 science and mathematics teachers with cognate area updating and enhancement. The center offers summer programs of one-to-three weeks duration, topical programs of varying duration and location that do not meet the normal university academic year schedules, and professional contacts through science and mathematics organizations. In addition, the Center provides opportunities for pre-college student activities on the UNCC campus.

Contact the Mathematics and Science Education Center at (704) 547-4838 for specific information about its programs.

WFAE 90.7 FM is Charlotte's only National Public Radio affiliate, on the air 24 hours a day, 365 days a year. Its 100,000-watt stereo signal reaches listeners in 22 North and South Carolina counties with a program schedule consisting of news, jazz and folk music. Offices and studio facilities are located at University Place. Student interns and volunteers from the community supplement the work of 13 full-time professional staff members in areas of operations, production and promotion. In addition, faculty, staff and students contribute to WFAE's ongoing local programming efforts. For more information about the station, call (704) 549-WFAE for a complimentary issue of WFAE's monthly radio guide, or write to WFAE, 1 University Place, Suite 91, Charlotte, NC 28262.

Benefactions

FIRST CITIZENS BANK SCHOLARS MEDAL

In order to foster the advancement and diffusion of knowledge and creative endeavors, the Graduate School presents each year one or two Scholars Medals for excellence in creative activities and research. Full-time faculty members of The University are eligible. Nominations are based on the excellence and importance of contributions in research and creative activities, for example, a scientific discovery, a book, a series of related articles, a novel, sculpture, or paintings. The award, which takes the form of a cash prize and a medal, is sponsored by First Citizens Bank.

NCNB AWARDS FOR TEACHING EXCELLENCE

The generosity of NCNB has made possible the NCNB Awards established for the purpose of recognizing and honoring members of the faculty for distinguished service. The NCNB Awards initially are used to reward excellence in teaching by members of the faculty or to honor faculty members for distinguished research and scholarly writing or devoted and sacrificial service to The University and to humankind.

SCHOLARSHIPS

UNCC offers a comprehensive undergraduate scholarship program made possible by gifts from individuals, corporations and foundations. For a description of these scholarships and a listing of others, see *Financial Aid.*

Student Life

ACTIVITIES

Students at The University of North Carolina at Charlotte are encouraged to participate in extracurricular activities. Student Body Government, University Program Board, campus publications and WFAE (the radio station) are only a few of the activities available which can play a significant role in each student's development and total education. Participation in activities, ranging in type from service and religious to athletic and social, and from creative arts and crafts to wilderness experiences, increases a student's opportunities to acquire leadership skills, to experience the responsibilities involved in functioning within a self-governmental process, and to develop personal talents and interests.

Students are in good standing and eligible for participation in student activities as long as they are academically eligible to continue their enrollment.

Athletics at The University of North Carolina at Charlotte offers the interested student-athlete a choice of 13 intercollegiate sports for men and women in which to compete on the varsity level.

Male athletes compete in seven sports during the academic year — soccer and cross country in the fall; basketball and swimming in the winter (during fall and spring semesters); and tennis, baseball (also with a fall schedule) and golf (also with a fall schedule) in the spring.

The 49er men's program competes under the national governing powers of the National Collegiate Athletic Association (NCAA), of which it is a member of Division I, the highest competitive level (large colleges and universities), in all seven sports.

UNC Charlotte is also a charter member of the Sun Belt Conference, which was formed in 1976 and includes Jacksonville; South Florida; South Alabama; Virginia Commonwealth; Western Kentucky; and the University of Arkansas, Little Rock. Championship meets and tournaments are conducted in 11 sports within the SBC, from which winners may advance to the NCAA's national championship.

The UNCC women's intercollegiate athletic program consists of six sports, including volleyball, basketball, swimming, softball, cross country and tennis. The women's program also falls under

the national governing jurisdiction of the NCAA, a move which came about during the 1982-83 academic year. Since 1983 the women have competed in Sun Belt Championships in volleyball, basketball, tennis and cross country.

The 49er women compete at the Division I level of the NCAA and are participating at the highest competitive level in the nation. Scholarships for deserving female athletes are available in all six women's sports, with basketball receiving the emphasis in terms of funds allocated.

The men's basketball team plays home games in the 23,000-seat Charlotte Coliseum or the Mine Shaft gymnasium on campus; the baseball, soccer and softball teams play on campus playing facilities; and the golf team competes at Pawtuckett Country Club. The remaining four men's teams play on campus. The UNCC women play home basketball games in the Charlotte Coliseum and the Mine Shaft gymnasium; home volleyball matches and swim meets are held in the Mine Shaft; and both tennis teams compete on campus facilities.

Intramural sports are offered in a comprehensive program to provide enjoyable recreational opportunities for the student body. The program includes team, dual and individual sports for both men and women, corecreational activities and ample opportunities for unstructured "free play" activities. The gymnasium is open for student use throughout the week, at night and on weekends.

Designed primarily for the participant, the gymnasium features six indoor basketball courts, an Olympic-sized swimming pool, handball and squash courts, weight and wrestling rooms, a well-equipped training room and lockers for 6,000 students and faculty. It will seat 3,200 spectators for basketball and other intercollegiate activities. In addition, the gym houses classrooms and an auditorium for audiovisual presentations.

The Student Body Government provides students an early experience in governmental affairs. Students often find their work in student government a useful background for later public service. The history of student government is as old as the institution itself. The University encourages student participation in its affairs and has student representatives on many of the faculty and administrative committees. The leaders of student government are committed to representing the student body and to developing students' awareness of the many facets of life at their University. All students who are regularly enrolled at UNCC, whether on a part- or full-time basis, are entitled to participate in student government.

At UNCC, Student Body Government comprises:

The Executive Branch, made up of the president, his/her cabinet, various appointees such as the attorney general and student legal counsel as well as a number of committees appointed by the president.

The Student Legislature, composed of the chairperson, the four class presidents, the residence hall representatives, commuter student representatives, representatives from each college chosen by the students majoring in the several colleges of The University, and graduate student representatives. The chair of the Student Legislature conducts all meetings and serves as liaison between the Legislature and the president's office. The student body treasurer reports to the Student Legislature.

The Student Judiciary, composed of the justices of the Student Court, attorney general, and the student legal counsel, is responsible for dealing with cases of alleged violations of the UNCC Code of Student Responsibility and for interpreting the Student Body Constitution.

The Student Leadership Development Program was implemented with the belief that leadership skills can be developed and that UNCC students deserve the best program available to nurture them in the acquisition of these skills. This program provides individuals with opportunities to develop skills and abilities at their own level. It also provides The University and student organizations with potentially more effective and efficient leaders.

The goal is to provide a comprehensive and diverse program of leadership development activities for student leaders and potential leaders.

The program consists of five major components. Each component is designed for a target group of campus leaders, members of their organizations or potential leaders of campus organizations. A variety of training methods and formats are available for student leaders. The components of the Leadership Program are:

(1) The **Leadership Transition Retreat**—For established leaders
(2) **Leadershop;** a one day leadership seminar and **Leaderworks;** an eight week series. Both programs are offered for any club or organization members and are held in the fall semester.
(3) **Emerging Leaders**—For freshmen
(4) **Leadership Theory and the Dynamics of Group Process**—A three-credit course in the Department of Human Services
(5) Individual and Group Consultation

Contact the Dean of Students Office for more information, 547-2375.

The Student Media Board is comprised of student, faculty and administrative staff members, as well as representatives of the various student media. The editors of these media are elected during the spring elections. Five at-large members are also chosen at this time. Students interested in the media area should contact the media offices at 547-2663. The UNCC media include:

The University Times. The weekly student newspaper, published every Thursday, covers campus news and provides journalistic experience. With a circulation of 7,000, the newspaper provides a vital service to the entire University community by keeping readers informed of issues of common concern and interest.

Etc. Magazine. UNCC's features publication provides both a service to the University and an opportunity for student journalists to gain essential skills for careers. The magazine is designed to provide a valid picture of the spirit of campus life. It is valued as a pictorial record and as an opportunity for creative student journalists to produce a magazine which is representative of the student experience at UNCC. The magazine is published at the beginning of each semester and contains special sections directed to freshmen and seniors.

Sanskrit. The literary arts magazine published by students interested in the arts. Original work in writing, drawing, photography and other arts is welcomed by the editor. Submissions are professionally-juried and selections are published in the annual edition of the magazine.

The Year in Video is a visual record of University events that is produced by students and marketed to the University community as a historical reference and keepsake.

Media Marketing is the sales and promotion branch of Student Media. The department solicits advertising and coordinates promotion for UNCC's publications.

The University Program Board is a student-operated organization that plans and promotes social, cultural, educational and recreational programs for students and the University community. These programs include concerts, coffeehouse entertainment, Homecoming, lectures and fine arts, films, Jazzing, minority programs and other special activities.

The Program Board consists of a chairperson, vice chairperson, secretary, treasurer, and 10 committee directors and five at-large members. The chairperson, vice chairperson and two at-large positions are elected in the annual campus-wide spring elections. Directors and three members at large are selected by an application and interview process during spring semester. Any member of the University community is welcome to join one of the eight committees.

STUDENT ORGANIZATIONS

The University has many clubs and organizations which help meet the academic, social, political and religious needs of UNCC students. Following is a list of the clubs and organizations which are chartered for the 1990-91 academic year through the Student Government Association. Students interested in any of these organizations should contact the Student Government Office, 547-4606, or the Dean of Students Office, 547-2375.

Allied Health Club
Alpha Kappa Psi (Business Fraternity)
Alpha Phi Omega
Alpha Theta
American Institute of Architecture Students
American Marketing Association
American Society of Civil Engineers
American Society of Heating, Refrigeration and Air Conditioning Engineers
American Society of Mechanical Engineers
Americal Society of Personnel Administrators
Amnesty International
Arnold Air Society
Associated General Contractors of America
Association of Biology Graduate Students
Association of Computing Machinery
Association of Nursing Students
Association of Systems Management
Baha'i Club
Baptist Student Union
Black Student Union
Campus Crsade for Christ
Canterbury Club
Children of the Sun Cultural Choir

STUDENT ORGANIZATIONS (continued)

Chi-Rho Catholic Student Union
Christian Science Organization
College Democrats
College of Architecture Student Council
Commuter Information Assistance
Cooperative Campus Ministry
Dance Ensemble
Debate Team
Financial Management Association
Gala
German Club
Graduate Historical Association
Graduate Student Association
Greek Row Council
Gymnastics Club
History Club
Hockey Club
Institute of Electrical and Electronic Engineers
Institute of Internal Auditors
Institute of Transportation Engineers
International Business Club
International Club
International Studies
Interfraternity Council
Intersorority Council
Inter-Varsity Christian Fellowship
Karate Club
Mean Green Music Machine
Model United Nations Club
Muslim Student Association
NAACP
National Art Education Association
NCAE Student Programs
North Carolina Student Legislature
Nursing Student Association
NSPE Student Chapter
Omicron Delta Kappa
Pi Sigma Epsilon
Political Science Club
POM/IE
Pre-Law Society
Reentering Students Association
Rotoact
Safe Drive
Science Fiction and Fantasy Guild
Society of Women Engineers
Student Council for Exceptional Children
Students for Christ
Tau Beta Pi
Theatre Club

Greek Organizations
Alpha Delta Pi Sorority
Alpha Kappa Alpha Sorority
Alpha Phi Alpha Fraternity
Alpha Sigma Phi Fraternity
Chi Omega Sorority
Chi Phi Fraternity
Delta Sigma Phi Fraternity
Delta Sigma Theta Sorority
Delta Zeta Sorority
Kappa Alpha Fraternity
Kappa Alpha Psi Fraternity
Kappa Sigma Fraternity
Lambda Chi Alpha Fraternity
Phi Kappa Sigma Fraternity
Pi Kappa Phi Fraternity
Sigma Chi Alpha Fraternity
Sigma Kappa Sorority
Sigma Phi Epsilon Fraternity
Tau Kappa Epsilon Fraternity
Zeta Tau Alpha Sorority

HONORARIES

The following is a list of national/international honor societies which have chapters at UNC Charlotte to recognize achievement in the disciplines indicated. Further information on each organization is available from the department or college offering the discipline.

Alpha Kappa Delta, national sociology honor society
Alpha Phi Sigma, national honor society for the criminal justice sciences
Beta Alpha Psi, national accounting honor society
Beta Gamma Sigma, national honor society in business and management
Gamma Theta Upsilon, international geography honor society
Omicron Delta Kappa, national leadership honorary
Phi Alpha Theta, international history honor society
Phi Eta Sigma, national college scholastic honor society of freshmen. Contact: Dean of Students Office.
Phi Kappa Phi, national honor society (all disciplines). Contact: Vice Chancellor for Academic Affairs Office.
Phi Alpha Alpha, national public affairs and public administration honor society (Graduate students only)
Pi Mu Epsilon, national mathematics honor society
Pi Sigma Alpha, national political science honor society
Sigma Gamma Epsilon, national earth sciences honor society
Sigma Pi Sigma, national physics honor society
Sigma Tau Delta, national English honor society
Sigma Theta Tau, international nursing honor society
Tau Alpha Pi, national engineering technology honor society
Tau Beta Pi, national engineering honor society

HONORS AND AWARDS

A number of individual student honors and awards for academic achievement, leadership and service are given annually through the various colleges and on a University-wide basis. Among the academic honors are the Chancellor's List, the Dean's List, commencement marshals and graduation with distinction of summa cum laude, magna cum laude or cum laude. (See the chapter *Academic Regulations and Degree Requirements* for more information.) An annual Honors and Awards Program is held in the spring prior to graduation.

OFFICE OF RELIGIOUS AFFAIRS

As a tax-supported public institution, The University of North Carolina at Charlotte neither promotes nor recommends any religious orientation. However, The University recognizes that spiritual discernment and moral appreciation are essential to the development of the whole personality and therefore has established an Office of Religious Affairs headed by a coordinator.

The functions of this office include providing information to the campus community and general public about religious activities and programming as well as coordinating the activities of religious organizations in The University. A large number of such organizations at UNCC provide a variety of services including prayer, pastoral and academic counseling, retreats, Bible study, marriage preparation, discussion groups, ecumenical activities and social services. Faculty members and students may obtain additional information by contacting the Office of the Dean of Students or the Office of Religious Affairs.

The religious denominations listed below provide the full-time services of their representatives to serve the spiritual needs of students and other members of the campus community.

Don Rogers, Baptist
Barbara Domby, Catholic
Tim Auman, Methodist/Presbyterian
Will Hinson, Episcopal

These persons and other denominational representatives may be reached through the Office of Religious Affairs, 200 King Building, 547-2344.

University Regulation of Student Conduct

As students willingly accept the benefits of membership in the UNC Charlotte academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNCC community cooperation and make those benefits possible.

The University of North Carolina at Charlotte has enacted two codes governing student conduct. The University has also enacted a program for the prevention of the use of illegal drugs and alcohol abuse. All UNCC students are obligated to be familiar with these codes and to conduct themselves in accordance with the standards set forth.

THE UNCC CODE OF STUDENT ACADEMIC INTEGRITY governs the responsibility of students to maintain integrity in academic work, defines violations of the standards, describes procedures for handling alleged violations of the standards, and lists applicable penalties. The following conduct is prohibited in that *Code* as violating those standards:

A. **Cheating.** Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices in any academic exercise. This definition includes unauthorized communication of information during an academic exercise.

B. **Fabrication and Falsification.** Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of altering information, while fabrication is a matter of inventing or counterfeiting information for use in any academic exercise.

C. **Multiple Submission.** The submission of substantial portions of the same academic work (including oral reports) for credit more than once without authorization.

D. **Plagiarism.** Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgement of the source). The sole exception to the requirement of acknowledging sources is when the ideas, information, etc. are common knowledge.

E. **Abuse of Academic Materials.** Intentionally or knowingly destroying, stealing or making inaccessible library or other academic resource material.

F. **Complicity in Academic Dishonesty.** Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

A full explanation of these definitions, and a description of procedures used in cases where student violations are alleged, is found in the complete text of The UNCC Code of Student Academic Integrity. This Code may be modified from time to time. Users are advised to contact the Office of the Dean of Students to assure they consult the most recent edition.

THE UNCC CODE OF STUDENT RESPONSIBILITY sets forth standards relating to student conduct other than academic conduct, describes the procedures for handling cases, and sets forth applicable penalties. The following conduct is prohibited and subjects a student to disciplinary action:

A. Intentionally or recklessly causing physical harm to any person on University premises or at University-sponsored activities, or intentionally or recklessly causing reasonable apprehension of such harm; intentionally or recklessly subjecting another person to a substantial risk of physical injury or serious emotional harm.

B. Unauthorized use, possession or storage of any weapon on University premises or at University-sponsored activities.

C. Intentionally initiating or causing to be initiated any false report, warning or threat of fire, explosion, or other emergency on University premises or at University-sponsored activities.

D. Intentionally or recklessly interfering with normal University or University-sponsored activities, including, but not limited to, studying, teaching, research, University administration, or fire, police or emergency services. Students are advised that a separate policy (UNCC Policy Statement #58, "Interference with University Operations," approved by the UNCC Board of Trustees in 1981), prohibits student action taken "with the intent to obstruct or disrupt any normal operation or function of the University." Students charged with violation of that policy may be subject to disciplinary action in accord with the procedures described herein. The full text of the Policy Statement is available for inspection in the Office of the Dean of Students.

E. Knowingly violating the terms of any disciplinary sanction imposed in accordance with this Code.

F. Unauthorized distribution or possession for purposes of distribution of any controlled substance or illegal drug on University premises or at University-sponsored activities. (See University Policy Statement #87 below.)

G. Intentionally or recklessly misusing or damaging fire safety equipment or elevators.

H. Intentionally furnishing false information to The University.

I. Forgery, unauthorized alteration, or unauthorized use of any University document or instrument of identification.

J. Intentionally and substantially interfering with the freedom of expression of others on University premises or at University-sponsored activities.

K. Theft of property or of services on University premises or at University-sponsored activities; knowing possession of stolen property on University premises or at University-sponsored activities.

L. Intentionally or recklessly destroying or damaging the property of others on University premises or at University-sponsored activities.

M. Failure to comply with the directions of University officials, including campus police officers, acting in performance of their duties.

N. Violation of published University regulations or policies, as approved by the Vice Chancellor for Student Affairs. Such regulations or policies may include the residence hall contract, as well as those regulations prohibiting sexual harassment by students, regulations relating to entry and use of University facilities, use of vehicles and amplifying equipment, campus demonstrations, and misuse of identification cards.

O. Possessing, consuming, or distributing alcoholic beverages without authorization on University premises or at University-sponsored activities, including but not limited to possession or consumption of alcoholic beverages on campus or at University-sponsored activities by students below the legal minimum age; display or consumption of liquor, fortified wine, or mixed beverages by students less than 21 years of age in their campus residences; giving, furnishing, or selling any alcoholic beverage on campus or at any University-sponsored activity to any person not of sufficient legal age to possess or consume such alcoholic beverage; failing to abide by the provisions of an alcoholic beverage approval form; and any sale of any alcoholic beverage on the University campus. (The full text of University Policy Statement #57, "Use and Consumption of Alcoholic Beverages," is available for inspection in the Office of the Dean of Students.)

P. Use or possession of any controlled substance or illegal drug on University premises or at University-sponsored activities.

Q. Unauthorized presence in or use of University premises, facilities, or property.

R. Unauthorized use or possession of fireworks on University premises.

S. Engaging in disorderly conduct such as fighting, threatening behavior, public disturbance, or drunk and disorderly conduct.

PROGRAM TO PREVENT USE OF ILLEGAL DRUGS AND ALCOHOL ABUSE (POLICY #87)

General. In keeping with efforts to maintain an environment that supports and encourages the pursuit and dissemination of knowledge, it is the policy of The University of North Carolina at Charlotte to consider the use of illegal drugs or alcohol abuse by students, faculty and staff or by others on premises under University control to be unacceptable conduct that adversely affects the educational environment.

Further, the University considers a sound awareness, education, and training program indispensable in combating illegal use of drugs and alcohol abuse, both as a preventive measure and as a remedy. The scope of the University program addresses the awareness needs of students, faculty, administrators, and other staff members and includes the following minimum components.

-The health hazards associated with the use of illegal drugs and with alcohol alone.
-The incompatibility of the use of illegal drugs or abuse of alcohol with maximum achievement of personal, social, and educational goals.
-The potential legal consequences (including both criminal law and University discipline) of illegal drug abuse.
-The effective use of available campus and community resources in dealing with illegal drug abuse and alcohol abuse problems.

Responsibilities: It is the responsibility of all students, faculty, and staff to conduct themselves in such a way as to contribute to an environment free of illegal drug use and abuse of alcohol. Also, students, faculty and staff are responsible, as citizens, for knowing about and complying with the provisions of North Carolina law that make it a crime to possess, sell, deliver, or manufacture those drugs designated collectively as "controlled substances" in Article 5 of Chapter 90 of the North Carolina General Statutes.

The Health Educator and the Assistant Director of Personnel for Training and Employee Relations are responsible for designing and carrying out a comprehensive program of awareness education and training for students, faculty and staff on the subject of preventing the illegal use of drugs and abuse of alcohol. The Substance Abuse Prevention Committee will provide guidance and support to their efforts, which will be coordinated through the Vice Chancellor for Student Affairs as Coordinator of Drug Education.

The Director of the Counseling Center shall, within the limits of available resources, provide services and programs to students, faculty and staff seeking assistance with problems of illegal drug use or alcohol abuse. Counseling Center services to faculty and staff are available under the University's Employee Assistance Program (EAP). In cases where the treatment needs of such students, faculty and staff exceed the resources of the Center, the Center shall provide referral to appropriate facilities in the community.

Collaboration with Community Resources. The University's program emphasizes collaboration with local resources such as the Charlotte Drug Education Center, Council on Alcoholism and Chemical Dependency, Mecklenburg County Substance Abuse Services, Charlotte Treatment Center, Open House, Inc., Alcoholics Anonymous, Al-Anon, etc. To this end, the University shall participate in the Mecklenburg Coalition on Substance Abuse and will establish a local advisory board to further collaborate between the University and the Charlotte Community.

Education and Prevention Activities. The University's institution-wide awareness, education, and training efforts stress prevention. The goal of these efforts is (1) encourage non-users of illegal drugs and alcohol to continue to be non-users, (2) to encourage users of alcohol to do so responsibly, and (3) to encourage users of illegal drugs to stop.

Illegal Use of Drugs and Abuse of Alcohol. The use of illegal drugs and the abuse of alcohol are considered by The University to be problems which can be overcome. Therefore, the educational and rehabilitative services mentioned above are available on a confidential basis. However, the possession, sale, delivery, or manufacture of illegal drugs will not be tolerated on campus or off campus in the event that the interests of the University may be affected. The University will cooperate fully with law enforcement agencies and will apply appropriate disciplinary processes should a student, faculty member, or staff member violate criminal statutes with regard to illegal drugs. Violations may subject a student, faculty member or staff member to prosecution and punishment by civil authorities *and* to disciplinary action by the University. It does not constitute "double jeopardy" for the University to initiate its own disciplinary proceedings for the same offense when the alleged conduct is deemed to affect the interests of the University.

Disciplinary procedural safeguards applicable to one's status as a member of the University community will be followed. These are described in the following documents:

Students ..... *UNC Charlotte Code of Student Responsibility*
Staff (subject to State Personnel Act) ..... *State Personnel Manual*
Staff (exempt from State Personnel Act) ..... *EPA Non-Faculty Personnel Policy*
Faculty ..... Section 603 of the *Code of the University of North Carolina and Section 6 of Tenure Policies, Regulations and Procedures of UNC Charlotte*

(Minimum sanctions described below in the Policy would also apply to employees who do not fall in any of the categories above.) In the event a student is also an employee of the University, the minimum sanctions for employment as well as student status would apply.

The use of illegal drugs may lead to a variety of sanctions, from written warnings with probationary status to expulsion from enrollment or discharge from employment. However, in accordance with the Policy on Illegal Drugs adopted by the Board of Governors from the University of North Carolina, the following minimum penalties shall be imposed for the particular offenses described.

Trafficking in Illegal Drugs

1. For the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedule I, N.C. General Statutes 90-89, or Schedule II, N.C. General Statutes 90-90 (including, but not limitd to, heroin, mescaline, lysergic acid diethylamide, opium, cocaine, amphetamine, methaqualine), any student shall be expelled and any faculty member or staff member shall be discharged.

2. For a first offense involving the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedules III through VI;, N.C. General Statutes 90-91 through 90-94, (including, but not limited to, marijuana, pentobarbital, codeine) the *minimum* penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent. For a second offense, any student shall be expelled and any faculty member or staff member shall be discharged.

Illegal Possession of Drugs

1. For a first offense involving the illegal possession of any controlled substance identified in Schedule I, N.C. General Statutes 90-89, or Schedule II, N.C. General Statutes 90-90, the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent.

2. For a first offense involving the illegal possession of controlled substance identified in Schedules III through VI, N.C. General Statutes 90-91 through 90-94, the *minimum* penalty shall be probation, for a period to be determined on a case-by-case basis. A person on probation must agree to participate in a drug education and counseling program, consent to regular drug testing, and accept such other conditions and restrictions, including a program of community service, as the Chancellor or the Chancellor's designee deems appropriate. Refusal or failure to abide by the terms of probation shall result in suspension from enrollment or from employment for any unexpired balance of the prescribed period of probation.

3. For second or other subsequent offenses involving the illegal possession of controlled substances, progressively more severe penalties shall be imposed, including expulsion of students and discharge of faculty members or staff members.

Suspension for a Minimum Period of "One Semester or its Equivalent." This logically may be interpreted to mean, in the case of a student, forfeiture of at least one full semester of academic credit or attendance; this may be accomplished either (1) by suspending the student for the unexpired balance or the semester during which guilt is determined, with attendant loss of all academic credit for that semester, or (2) by placing the student on probation for the unexpired balance of the semester during which guilt is determined and suspending the student for the duration of the next succeeding semester; in the case of a faculty member or staff member, it may be interpreted to mean forfeiture of pay for a period of 18 weeks. Since the current State Personnel Act specifies that disciplinary suspensions cannot exceed three days, offenses for which an 18-week minimum suspension is required by the Board of Governors' policy will result in discharge of an employee subject to the State Personnel Act.

Suspension Pending Final Disposition. When a student, faculty member, or staff member has been charged by the University with a violation of policies concerning illegal drugs, he or she may be suspended from enrollment or employment before initiation or completion of regular disciplinary proceedings if, assuming the truth of the charges, the Chancellor or, in the Chancellor's absence, the Chancellor's designee concludes that the person's continued presence within the University community would constitute a clear and immediate danger to the health or welfare of other members of the University community; provided, that if such a suspension is imposed, an appropriate hearing of the charges against the suspended person shall be held as promptly as possible thereafter.

References. The use of alcoholic beverages on the University campus is regulated by Policy Statement #57, "Policy on Alcoholic Beverages."

Policy Statement #62, "Employee Assistance Program," establishes a free employee assistance service as part of the University Counseling Center.

All UNCC students are obligated to be familiar with The University of North Carolina at Charlotte Code of Student Academic Integrity, Code of Student Responsibility and all University Policies governing student conduct. Copies of these documents have been distributed to students. Any student who needs a copy of these documents may obtain one at the Office of the Dean of Students. The University reserves the right to amend its codes from time to time. Notice of amendments will be publicized.

Admission to The University

The University considers all applications without regard to race, color, sex, sexual orientation, national origin, handicapped status, age or religion. The University reserves the right to withhold the admission of any applicant who fails to meet any of the requirements for admission. In addition, it reserves the right to restrict enrollments when necessary because of budgetary or other constraints. Applications for either regular semester or the summer terms should be submitted and completed no later than the dates published in this *Catalog*. In some programs, the vacancies will be filled several weeks prior to those deadlines.

All applications for admission are reviewed when all required credentials are received. All relevant factors are considered, with major emphasis being placed on the academic history of the applicant. The intent of The University is to offer admission to those applicants whose credentials indicate a strong likelihood for success in their selected curricula. The Admissions Advisory Committee may make exceptions to the minimum criteria for applicants who are judged to have potential or talent not revealed by test scores and high school class rank.

Not all applicants who meet the minimum requirements can be accommodated in some of the programs. These programs select the best qualified from those meeting the minimal requirements.

Notification dates of admission will vary by program. The College of Architecture invites a number of its top applicants to come to the campus for an interview. Consequently, notification of admission to this program will be later than for other programs.

Evidence of good physical and mental health is required prior to registration. A medical report form is sent to successful applicants along with the notice of admission. **As of July 1, 1986, state law requires all students entering college in the state of North Carolina to meet the immunization requirements described on page 35. A family physician or the Health Department must verify that the student has had necessary immunizations.**

Persons seeking application forms and information about undergraduate and graduate programs should address inquiries to:

Office of Admissions
University of North Carolina at Charlotte
Charlotte, North Carolina 28223
Telephone: (704) 547-2213

Application Dates

Students interested in enrolling at The University of North Carolina at Charlotte are advised to file their applications for admission according to the schedule below or earlier if possible. The schedule is based on the amount of time required to process an application and inform the student of the admission decision. **During periods of rapid growth or in programs which have limitations on the number of new students they can accept, available space may be filled earlier than the dates indicated below.**

Term of Entry	Application Should Be Filed By	Application Should Be Completed By
First Summer Term	May 1	May 15
Second Summer Term	June 1	June 15
Fall Semester	July 1	July 15
Spring Semester	November 15	December 1

The University may alter these application dates without further notice in accordance with available resources and the enrollment limitation established by the North Carolina General Assembly.

Students planning to live on campus should apply for admission and request a housing application as early as possible. *Admission to UNC Charlotte does not guarantee residence hall space* because the demand for on-campus housing is usually greater than the supply. Students who request on-campus housing will be sent a housing contract after they receive their notice of admission. Students are advised to complete the housing application and return it and the required prepayment promptly to increase the possibility of getting space in one of the residence facilities. Early application for housing is particularly important for physically impaired students because of the limited number of housing units designed to accommodate their needs.

Requirements for Undergraduate Admission

GENERAL REQUIREMENTS FOR UNDERGRADUATE ADMISSION

1. Application in writing to the Admissions Office.
2. Satisfactory record of scholastic achievement.
3. Application fee of $15, which is neither deductible nor refundable.
4. The applicant bears the responsibility for supplying The University with all required credentials. Nondisclosure of an applicant's complete academic history will result in immediate dismissal from The University.

ADDITIONAL ADMISSIONS REQUIREMENTS FOR FOREIGN APPLICANTS

1. Submission of Official Scores on the Test of English as a Foreign Language or the Michigan Test, if the applicant is from a non-English speaking country.
2. A Certificate of Financial Responsibility must be filed showing the applicant's financial resources during his/her stay in the United States.
3. Under no circumstances will an I-20 form be issued until the applicant has been admitted to a degree program.

REQUIREMENTS FOR CONSIDERATION FOR ADMISSION TO FRESHMAN STANDING

Admission of freshman students is based on course selection and the predicted college grade point average (PGA), a combination of secondary school rank and test score in which class rank approximately is weighted twice as important as test score.

1. Transcript of secondary school study which identifies the applicant as a graduate of an accredited secondary school and bears a recommendation by a school official. The record should show the grades through the eleventh year, senior year courses in progress, rank in class and pertinent test data. A high school equivalency certificate or G.E.D. may be submitted in lieu of a secondary school diploma.
2. **Required Course Units:** Applicants for admission must present four course units in *English*, emphasizing grammar, composition and literature; three course units in *mathematics,* including Algebra I, Algebra II and geometry, or a higher level mathematics course for which Algebra II is a prerequisite; two course units in *social studies,* including one unit in U.S. history; and three course units in *science,* including at least one unit in a life or biological science (for example, biology), at least one unit in a physical science (for example, physical science, chemistry, physics), and at least one laboratory course; and two units in one *foreign language.* In addition, it is *recommended* that prospective students complete one foreign language course unit and one mathematics course in the twelfth grade, one unit of world history and one-half unit of health education. **Priority is given to applicants enrolled in the recommended units or at least three academic courses in the twelfth grade.**

Course units as defined in these requirements may include those high school level courses taken and passed by an applicant after graduating from high school, as well as those taken while enrolled as a high school student.

3. An **official score report** from the American College Testing Program (ACT) or the Scholastic Aptitude Test of the College Entrance Examination Board (SAT).

   While The University recognizes that test scores may be less important than academic history in predicting the chances for collegiate success, applicants are expected to present a satisfactory combination of secondary school class rank and SAT or ACT scores.

   Students may obtain test information and application forms from their school counselors or by writing to:

   American College Testing Program
   P.O. Box 168
   Iowa City, Iowa 52240
   (UNCC Code — 3163)

   Educational Testing Service
   P.O. Box 592
   Princeton, New Jersey 08540
   (UNCC Code — 5105)

4. Transfer applicants who present fewer than 24 hours of transferable work are considered *applicants for freshman standing* and, in addition to requirements listed above, they must have attained at least a *C* average in their post-secondary study, as evidenced by official transcripts mailed directly to the Office of Admissions by each institution attended.

Special Requirements for Acceptance into Accounting. Applicants must have a predicted college grade point average (PGA) of at least 2.2 according to The University's calculation.

Special Requirements for Acceptance into Architecture. Applicants must present algebra, trigonometry, plane and solid geometry, or the equivalent in integrated courses and a Math score of at least 400 on the SAT or 20 on the ACT. Applications for the fall semester are accepted through January 31 each year and a personal interview and letter of intent are required.

Special Requirements for Acceptance into Business Administration. Applicants are expected to present a Math score of at least 400 on the SAT or 20 on the ACT. Applicants must also have a predicted college grade point average (PGA) of at least 2.1 according to The University's calculation.

Special Requirements for Acceptance into Computer Science. Applicants must present a predicted college grade point average (PGA) of at least 2.5, according to The University's calculation and satisfactory completion of Algebra II, or the equivalent.

Special Requirements for Acceptance into Engineering. All applicants must present acceptable grades in algebra, trigonometry, plane and solid geometry, or the equivalent in integrated courses.

A. A student satisfying
   *SAT MATH > 500, SAT VERBAL > 400, HS RANK > 1/2
   or
   *SAT MATH > 500, SAT VERBAL > 350, PGA > 2.5, HS Rank > 1/2
   may be admitted directly to the lower division of a department. The lower division encompasses the first two years of *Catalog*-specified courses in a department.

B. A student not admitted to the lower division but having SAT MATH > 450, SAT VERBAL > 350, HS Rank > 1/2, will be admitted to the Freshman Engineering Program in the College of Engineering. The student may indicate the major of interest as an aid in the selection of his/her adviser.

*Or ACT equivalents.

Special Requirements for Acceptance into Mathematics. Applicants must present a predicted college grade point average (PGA) of at least 2.5, according to The University's calculation and satisfactory completion of Algebra II, or the equivalent.

Special Requirements for Acceptance into Music. All applicants must audition in their applied instrument with a music faculty committee which will determine acceptance into the music program based on the audition and the students preparedness for a major in music.

Early Admission. The University will admit specially talented high school students after they have completed the eleventh grade (achieved bona fide senior status as defined by their respective school systems) provided they meet other standards required for freshman admission.

A letter of recommendation from the student's secondary school principal is required for consideration for early admission. Applicants admitted through the early admission program have usually shown outstanding ability in their overall academic performance.

Advanced Placement Course Credit (APP). Students may receive credit for Advanced Placement Program Tests of the College Entrance Examination Board in accordance with academic regulations published in this *Catalog*. Students must request that official AP test results be sent directly to the Office of Undergraduate Admissions, (Code 5105).

Admission of North Carolina Scholars. Students in the North Carolina Scholars Program will be given special consideration in the admissions process. Applicants should ask their school counselor to identify participation in the scholars program on the high school transcript.

REQUIREMENTS FOR CONSIDERATION FOR ADMISSION OF TRANSFER STUDENTS

Applicants who have attended other post-secondary institutions without earning at least 24 semester hours in transferable courses are considered to be applicants for freshman standing and must also meet the requirements listed in the preceding section.

1. Two copies of official transcripts must be mailed directly to the Office of Admissions by each post-secondary institution an applicant has attended.
2. An official secondary school transcript must be provided.
3. Applicants for transfer admission must present a minimum academic average of *C* based on *all* post-secondary courses attempted and be in good standing at the last institution attended.
4. Applicants for admission to Architecture and Engineering must meet the additional mathematics and science requirements for admission as a freshman. Those requirements may be satisfied with either appropriate high school or college courses.

Special Requirements for Acceptance into Accounting. Applicants must present a grade point average of 2.75 or more in the following 10 courses or the portion they have completed: ENGL 1101 and 1102; MATH 1100 or 1101, 1120; STAT 1220; INFO 2130; ECON 2101 and 2102; and ACCT 2121 and 2122. Applicants who have not completed all 10 courses also must present an overall GPA of 2.5 or more. A GPA of 2.75 or more in the 10 courses is required for enrollment in the junior level accounting courses beginning with ACCT 3138.

Special Requirements for Acceptance into Architecture. A personal interview and a letter of intent are required for consideration for acceptance into Architecture.

Special Requirements for Acceptance into Business Administration. Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) for acceptance into Business Administration. Applicants must present an overall GPA of at least 2.5 (on a 4.0 scale) as well as an average of 2.5 or more in the following 10 courses or the portion they have completed: ENGL 1101 and 1102; MATH 1100 or 1101, 1120; STAT 1220; ACCT 2121 and 2122; ECON 2101 and 2102; and INFO 2130. A GPA of 2.5 or more in the 10 courses is required for enrollment in junior-level business courses.

Special Requirements for Acceptance into Computer Science. Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) in all previous college courses with no grade less than *C* in computer science courses previously undertaken.

Special Requirements for Acceptance into Criminal Justice. Graduates of two-year institutions who wish to enter the General concentration, must have earned an A.A.S. degree with a major in a criminal justice area.

Upon acceptance of the A.A.S. degree, the successful applicant may be granted up to 64 semester hours which are valid only toward the General concentration.

Special Requirements for Acceptance into Economics. Students transferring from outside the university into the Department of Economics must have a 2.0 overall grade point average and a 2.0 grade point average in eight (8) specified courses: English 1101 and 1102; Mathematics 1101, 1120, and 1220; Business 2130; and Economics 2101 and 2102.

Special Requirements for Acceptance into Engineering. Applicants must present a grade point average of at least 2.5 (on a 4.0 scale). All transfer students will be admitted to the lower division of a department, and evaluation of transfer credits to a program will follow the guidelines of the North Carolina Engineering Transfer Board. The actual determination of transfer credits applicable toward degree requirements will be the responsibility of the department chair. Transfer students not satisfying the GPA $>$ 2.5 but from an ABET accredited engineering program may be admitted on an individual basis. Recommendations for such admission must come from the chair of the major department.

Special Requirements for Acceptance into Engineering Technology. Technical institute graduates who wish to enter the engineering technology program at The University of North Carolina at Charlotte must meet the following requirements:

1. Earn an Associate in Applied Science degree, or its equivalent, in a field appropriate to the option which the student plans to enter.
2. Achieve an overall grade point average (based on the 4.0 scale) of at least 2.2, or 2.5 for entry into the Manufacturing Engineering Technology track, on all courses taken at the technical institute. Exceptions to this requirement will be considered on the basis of individual merit.
3. Complete satisfactorily the prerequisite background courses for the option which the student plans to enter.

Acceptance of the A.A.S. degree indicates the acceptance of 64 semester hours toward the Bachelor of Engineering Technology degree only. These hours become invalid when a student transfers to any other degree program.

Special Requirements for Acceptance into Mathematics. Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) in all previous college courses with no grade of less than *C* in mathematics courses previously undertaken.

Special Requirements for Acceptance into Music. All applicants must audition in their applied instrument with a music faculty committee which will determine acceptance into the music program based on the audition and the students' preparedness for a major in music.

Special Requirements for Acceptance into Nursing. Applicants must present a grade point average of at least 2.5 (on a 4.0 scale). Registered Nurses who are currently licensed to practice may be admitted to the Pathway Option, an upper division track leading to the Bachelor of Science in Nursing degree, by meeting special requirements published in the Nursing section of this *Catalog*.

READMISSION OF FORMER STUDENTS

A student must make application for readmission to The University if he/she did not complete the last *regular* semester, fall or spring, prior to the semester or summer term for which he/she wishes to register. Applications should be filed at the Admissions Office in accordance with the published dates.

Readmission decisions are based on a review of the student's complete University record, with major emphasis given to the academic history and the probability for success in the major department and in terms of the general degree requirements.

Note: *Students who leave UNCC and subsequently earn an Associate of Arts degree may apply for admission as a transfer student and transfer a maximum of 64 semester hours. Hours earned and the grade point average at UNCC will be computed only on work attempted after readmission.*

For information on readmission after suspension for academic reasons, see page 58.

Two Year Rule for Undergraduate Students. Any undergraduate student who has not been enrolled at UNCC for a minimum period of 24 consecutive months is eligible for *one* readmission under the "two year" rule. Colleges and departments which have published admission or continued enrollment standards that are more restrictive than general University requirements retain the right to admit or to deny admission to a specific program.

If a student is readmitted under the provisions of the two year rule, then only those courses for which the student has received a grade of *C* or better (or *H* or *P*) can be used for academic credit. His or her grade point average will be based only on work attempted after readmission. Eligibility for continued enrollment is determined as in the case of transfer students.

To quality for graduation with honors, a student must complete at least 48 hours in residency after readmission to UNCC which are used in computing the grade point average.

Second Baccalaureate Major/Additional Minor. Students who have earned a bachelor's degree from UNCC may apply for readmission into a program leading to a second major or to an additional minor. See requirements which follow.

ADMISSION FOR SECOND BACCALAUREATE DEGREE

Students who have earned bachelor's degrees from UNCC or other accredited institutions may apply for admission to a program leading to a second degree of the same level if the following requirements are met:

1. Application in writing must be made to the Admissions Office in accordance with the published application dates.
2. The major field selected must be different from that of the first degree.
3. The degree sought must be different from the first when that degree was granted by UNCC.
4. Applicant must meet the requirements for acceptance into the selected field.

OTHERS ELIGIBLE FOR ADMISSION

Auditors. With the consent of the instructor, any student eligible for admission to The University may register as an *auditor* for any class in which space is available. The fees and procedures are the same as those for a credit enrollment. (See page 52 of this *Catalog* concerning academic regulations.)

Escrow Program Participants. The Escrow Program provides an opportunity for highly qualified students to take college credit courses while enrolled in secondary school. Records of credit earned will be maintained for use at The University or at another institution of higher learning.

Applicants recommended for participation in the program usually have shown great ability in particular academic areas. The recommendations are normally made by the secondary school principal.

Requests for additional information and application blanks should be directed to the Office of Admissions at UNCC.

Senior Citizens. Residents of North Carolina who have attained the age of 65 and who meet applicable admission standards may enroll tuition-free on a space-available basis. Senior citizens who enroll in these offerings of the Music, Dance and Theatre, and Visual Arts Departments will be obligated to pay the special fees which are assessed all students who enroll in these Departments. Interested persons should contact the Office of Admissions.

Non-degree Students. Non-degree students are those who are not candidates for degrees and who do not file complete academic credentials. They may enroll in undergraduate courses at UNCC until they have attempted a total of 18 semester hours with grade evaluation, but regular degree students will have preference for places in classes. Non-degree students are expected to conform to the standards required of all students. After reaching the 18-hour limitation, non-degree students must be reviewed and be acceptable for regular degree status before enrolling at UNCC.

Non-degree students who have done previous college work (including UNCC) must be eligible to return to the institution last attended. This classification is not open to foreign nationals who are on student visas.

The student must be 18 years of age or over and must understand at the time of his/her registration that the work completed in non-degree student status will be evaluated in terms of major department and degree requirements only after the student's formal admission to a degree program.

Transient Students (Visitors). Students enrolled at other colleges and universities who have written permission from their institutions to take specified courses at The University in a given semester or term may be admitted as transient students on a space available basis.

IMMUNIZATION REQUIREMENTS

As of July 1, 1986, state law requires all students entering college in the state of North Carolina to meet the immunization requirements described below. A family physician or the Health Department must verify that the student has the necessary immunizations. UNCC's Report of Medical History form, provided by the Office of Admissions, may be used for this purpose.

North Carolina high school immunizations will satisfy this requirement *if they are up to date and a copy is attached to the Medical History Form.* Students are responsible for the high school records.

Students who do not have a complete immunization record on file when beginning classes will have 30 days to obtain the required immunizations. A campus clinic will be available. Students who are not in compliance within 30 days of the first day of class will be required to withdraw from classes.

Evening and off-campus students are exempt. Medical and religious exemptions can be requested through the Health Center. Questions and forms should be directed to: UNCC Student Health Service, Charlotte, NC 28223.

IMMUNIZATIONS REQUIRED FOR ADMISSION TO COLLEGE

A. STUDENTS 17 YEARS OF AGE AND OLDER.

REQUIRED:

3 DTP (Diptheria, Tetanus, Pertussis) or 3 Td (Tetanus-diptheria) doses; one dose must be within the last ten years.

3 POLIO *(oral)* doses.

*1 MEASLES *(Rubeola)* dose, on or after the first birthday.

**1 RUBELLA dose.

B. STUDENTS 18 YEARS OF AGE THROUGH A BIRTHDATE OF JAN. 1, 1957.

REQUIRED:

3 DTP or Td doses, one dose must be within the last ten years.

*1 MEASLES *(Rubeola)* dose on or after the first birthday.

**1 RUBELLA dose.

C. STUDENTS BORN PRIOR TO JAN. 1, 1957 THROUGH AGE 49.

REQUIRED:

Primary series of 3 DTP or 3 Td doses - one dose must be within the last ten years.

(A documented Td BOOSTER within the past ten years will be accepted as evidence of the initial series.)

**1 RUBELLA dose.

D. STUDENTS 50 YEARS OF AGE AND OLDER.

REQUIRED:

Primary series of 3 DTP or 3 Td doses - one dose must be within the last ten years.

(A documented Td BOOSTER within the past ten years will be accepted as evidence of the initial series.)

* History of physician diagnosed measles disease OR laboratory proof of immunity is acceptable. Must repeat measles vaccine if received even one day prior to first birthday.

** ONLY laboratory proof of immunity to rubella is acceptable, physician diagnosed rubella disease is not acceptable.

Programs and Degrees Offered

Subject Area	Degree(s)	Minor	Teacher Certification	Other
Accounting	BS			
Afro-American and African Studies	BA			
Air Force Aerospace Studies (AFROTC)				
American Studies		•		Emphasis
Anthropology	BA	•	See Social Studies	
Architecture	BA/BArch MSA			
Army ROTC (Military Science)				
Art (Visual Arts)	BCA		•	Honors
Biology	BA/BS MA/MS	•	•	Honors/ Cooperative Education
Biology with option in Medical Technology	BA/BS			
Business Administration	BSBA/MBA			Cooperative Education
Chemistry	BA/BS/MS		•	Honors
Chemistry with option in Medical Technology	BA			
Child and Family Development	BA	•		
Civil Engineering	BSCE/MSCE			Cooperative Education/ Doctoral Studies*
Civil Engineering Technology	BET			Cooperative Education
Communication Studies		•		
Computer Science	BA/BS/MS	•		Cooperative Education
Counselor Education	MEd/MHDL[1] MHDL (Agency)		•	CAS** (School)
Criminal Justice	BS/MS	•		
Curriculum and Instruction	MEd		•	CAS**
Curriculum and Instruction Specialist (Supervision)	MEd		•	CAS**
Dance	BCA	•	•	Honors
Early Childhood Education See also Elementary Education	BA/MEd		•	CAS**

[1]Conversion to M.A. degree pending

Subject Area	Degree(s)	Minor	Teacher Certification	Other
Earth Sciences	BA/BS	•	•	Cooperative Education
Economics	BA, MS	•	See Social Studies	Cooperative Education
Education See specific topics: Curriculum and Instruction, Educational Administration, Elementary Education, Health Education, Intermediate Education, Middle Grades, Reading Education, Secondary Education, Special Education, Teaching English as a Second Language, Instructional Technology-Computers	Baccalaureate and Master's		•	Doctoral Studies* CAS**
Educational Administration School Administration	MEd, EdD		•	CAS** Doctoral Studies*
Electrical Engineering	BSEE/MSEE			Doctoral Studies* Cooperative Education
Electrical Engineering Technology	BET			Cooperative Education
Elementary (Early Childhood or Intermediate) Education	BA/MEd		•	CAS**
Engineering See specific topic areas: Civil Engineering, Electrical Engineering, Mechanical Engineering	Baccalaureate and Master's			Doctoral Studies* Cooperative Education
Engineering Technology See specific topic areas: Civil Engineering Technology, Electrical Engineering Technology, Manufacturing Engineering Technology, Mechanical Engineering Technology	BET			Cooperative Education
English	BA/MA	•	•	
Finance	BSBA			
Foreign Languages French, German or Spanish	BA	•	•	Certificate in Translating
French	BA	•	•	Certificate in Translating
Geography	BA/BS/MA	•	See Social Studies	Cooperative Education
German	BA	•	•	Certificate in Translating
Gerontology		•		
Health and Physical Education				Athletic Training Endorsement
Health Education	MEd		•	

Subject Area	Degree(s)	Minor	Teacher Certification	Other
History	BA/MA	•	• See Social Studies	Honors
Human Services	BA			
Instructional Technology Specialist-Computer	MEd		•	
Interdisciplinary Honors				Honors
Intermediate Education See also Elementary Education (Early Childhood and Intermediate)	BA/MEd		•	CAS**
International Studies		•		
Journalism		•		
Management	BSBA			
Management Information Systems	BSBA			
Marketing	BSBA			
Manufacturing Engineering Technology	BET			Cooperative Education
Applied Mathematics	MS			
Mathematics	BA/BS/MA	•	•	Honors/ Cooperative Education
Mathematics Education	MA		•	CAS**
Mechanical Engineering	BSME/MSME			Doctoral Studies* Cooperative Education
Mechanical Engineering Technology	BET			Cooperative Education
Middle Grades Education	BA/MEd		•	
Military Science Area (Army ROTC)				
Music	BCA	•		Honors
Nursing	BSN/MSN			
Operations Management	BSBA			
Performing Arts Dance, Music, or Theater	BCA	•	Dance	Honors
Philosophy	BA	•		
Physics	BA/BS	•	•	Honors
Political Science See also Public Administration	BA	•	See Social Studies	
Psychology	BA/MA	•		Honors
Public Administration	MPA			

Subject Area	Degree(s)	Minor	Teacher Certification	Other
Reading Education	MEd		•	
Religious Studies	BA	•		
School Administration	MEd		•	CAS**
Secondary Education English, History, Mathematics	MEd		•	CAS (English)** CAS (History)** CAS (Mathematics)**
Social Studies Anthropology, Economics, Geography, History, Political Science, Sociology (Contact the Coordinator of Certification in the College of Education and Allied Professions for more information.)			•	
Social Work	BSW			
Sociology	BA/MA	•	See Social Studies	
Spanish	BA	•	•	Certificate in Translating
Special Education	BA/MEd		•	CAS**
Supervision	MEd		•	CAS (Curriculum and Instruction Specialist)**
Teaching English as a Second Language	MEd		•	
Teaching Specialties	BA, MEd		•	
Theater	BCA	•		Honors
Visual Arts (Art)	BCA		•	Honors
Women's Studies		•		

*The University of North Carolina at Charlotte participates in two interinstitutional degree programs at the doctoral level: Doctor of Education (Ed.D.) in educational administration and Doctor of Philosophy (Ph.D.) in engineering. The Ed.D. is awarded by The University of North Carolina at Chapel Hill; the Ph.D is conferred by North Carolina State University.

**Certificate of Advanced Study certification is based upon the completion of approved programs of study beyond the master's degree. The Certificate of Advanced Study may be in a teaching field or one of the special service personnel areas. At UNCC, students electing the CAS programs are admitted and enrolled in the College of Education and Allied Professions. Formal coordination is maintained with other appropriate departments and colleges which provide course work needed in many of the CAS programs.

Financial Information

Student Expenses and Fee Payment

Charges for tuition and fees vary according to the student's status as a resident or nonresident of North Carolina. A nonresident student must pay a higher rate of tuition than a legal resident.

The University reserves the right, with the approval of proper authorities, to make changes in tuition and fees at any time.

STUDENT EXPENSES

Graduate students taking nine or more semester hours and undergraduate students taking 12 or more semester hours of work during a regular semester will be charged full tuition and fees. Students taking fewer than the nine hours for graduates and 12 hours for undergraduates will be charged a prorated portion of tuition and fees as specified in the fee schedules on page 43.

Costs for the regular academic year for a typical full-time North Carolina student are $1,035 in tuition and fees and $2,516 to $3,280 for housing and food, depending on the options chosen. For a typical out-of-state student, annual tuition and fees are $5,566.

The estimated average cost of books and supplies per semester varies by area and level of study and ranges from $225 to $300. Beginning students in architecture and engineering should allow an additional expense of $150 to $200 for drawing instruments, calculator and supplies. Uniforms and supplies for nurses cost approximately $250.

In addition to the above, the student should take into consideration the cost of clothing, snacks, recreation, laundry, transportation, etc., in planning his/her expenses for each semester.

FEE PAYMENT

Tuition and fees are due and payable on the day of registration. Advance registration billing and due dates of fees vary with the term. Checks and money orders should be made payable to The University of North Carolina at Charlotte. Visa and MasterCard are accepted.

Returned Check Policy. In the event that a check is returned by the bank, a certified letter will be sent to the maker, informing him/her that a penalty of $5 has been assessed and the account must be settled within 10 working days or The University will consider the check to be a bad check and will process it accordingly. A hold will be placed on the student's record until the bad check is covered and the penalty is paid. The student will also be dropped from enrollment for the current session and will not be allowed to re-enroll until the check is cleared.

Tuition and Fees

RESIDENCE STATUS FOR TUITION PURPOSES

The basis for determining the appropriate tuition charge rests upon whether a student is a resident or a nonresident for tuition purposes. Each student must make a statement as to the length of his or her residence in North Carolina, with assessment by the institution of that statement to be conditioned by the following:

Residence. To qualify as a resident for tuition purposes, a person must become a legal resident and remain a legal resident for at least 12 months immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, 12 months' legal residence means more than simple abode in North Carolina. In particular it means maintaining a domicile (permanent home of indefinite duration) as opposed to "maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education." The burden of establishing facts which justify classification of a student as a resident entitled to in-state tuition rates is on the applicant for such classification, who must show his or her entitlement by the preponderance (the greater part) of the residentiary information.

Initiative. Being classified a resident for tuition purposes is contingent on the student's seeking such status and providing all information that the institution may require in making the determination.

Parents' Domicile. If an individual, irrespective of age, has living parent(s) or a court-appointed guardian, the domicile of such parent(s) or guardian is, prima facie, the domicile of the individual; but this prima facie evidence of the individual's domicile may or may not be sustained by other information. Further, nondomiciliary status of parents is not deemed prima facie evidence of the applicant child's status if the applicant has lived (though not necessarily legally resided) in North Carolina for the five years preceding enrollment or re-registration.

Effect of Marriage. Marriage alone does not prevent a person from becoming or continuing to be a resident for tuition purposes, nor does marriage in any circumstance insure that a person will become or continue to be a resident for tuition purposes. Marriage and the legal residence of one's spouse are, however, relevant information in determining residentiary intent. Furthermore, if both a husband and his wife are legal residents of North Carolina and if one of them has been a legal resident longer than the other, then the longer duration may be claimed by either spouse in meeting the 12-month requirement for in-state tuition status.

Military Personnel. A North Carolinian who serves outside the State in the armed forces does not lose North Carolina domicile simply by reason of such service. Also, students from the military may prove retention or establishment of residence by reference, as in other cases, to residentiary acts accompanied by residentiary intent.

In addition, a separate North Carolina statute affords tuition rate benefits to certain military personnel and their dependents even though not qualifying for the in-state tuition rate by reason of 12 months legal residence in North Carolina. Members of the armed services, while stationed in and concurrently living in North Carolina, may be charged a tuition rate lower than the out-of-state tuition rate to the extent that the total of entitlements for applicable tuition costs available from the federal government, plus certain amounts based under a statutory formula upon the in-state tuition rate, is a sum less than the out-of-state tuition rate for the pertinent enrollment. A dependent relative of a service member stationed in North Carolina is eligible to be charged the in-state tuition rate while the dependent relative is living in North Carolina with the service member and if the dependent relative has met any requirement of the Selective Service System applicable to the dependent relative. These tuition benefits may be enjoyed only if the applicable requirements for admission have been met; these benefits alone do not provide the basis for receiving those derivative benefits under the provisions of the residence classification statute reviewed in this summary.

Grace Period. If a person (1) has been a bona fide legal resident, (2) has consequently been classified a resident for tuition purposes, and (3) has subsequently lost North Carolina legal residence while enrolled at a public institution of higher education, that person may continue to enjoy the in-state tuition rate for a grace period of 12 months measured from the date on which North Carolina legal residence was lost. If the 12 months ends during an academic term for which the person is enrolled at a State institution of higher education, the grace period extends, in addition, to the end of that term. The fact of marriage to one who continues domiciled outside North Carolina does not by itself cause loss of legal residence, marking the beginning of the grace period.

Minors. Minors (persons under 18 years of age) usually have the domicile of their parents, but certain special cases are recognized by the residence classification statute in determining residence for tuition purposes.

(a) If a minor's parents live apart, the minor's domicile is deemed to be North Carolina for the time period(s) that either parent, as a North Carolina legal resident, may claim and does claim the minor as a tax dependent, even if other law or judicial act assigns the minor's domicile outside North Carolina. A minor thus deemed to be a legal resident will not, upon achieving majority before enrolling at an institution of higher education, lose North Carolina legal residence if that person (1) upon becoming an adult "acts, to the extent that the person's degree of actual emancipation permits, in a manner consistent with bona fide legal residence in North Carolina" and (2) "begins enrollment at an institution of higher education not later than the fall academic term next following completion of education prerequisite to admission at such institution."

(b) If a minor has lived for five or more consecutive years with relatives (other than parents) who are domiciled in North Carolina and if the relatives have functioned during this time as if they were personal guardians, the minor will be deemed a resident for tuition purposes for an enrolled term commencing immediately after at least five years in which these circumstances have existed. If under this consideration a minor is deemed to be a resident for tuition purposes immediately prior to his or her eighteenth birthday, that person on achieving majority will be deemed a legal resident of North Carolina of at least 12 months duration. This provision acts to confer in-state tuition status even in the face of other provisions of law to the contrary; however, a person deemed a resident of 12 months duration pursuant to this provision continues to be a legal resident of the State only so long as he or she does not abandon North Carolina domicile.

Lost but Regained Domicile. If a student ceases enrollment at or graduates from an institution of higher education while classified a resident for tuition purposes and then both abandons and reacquires North Carolina domicile within a 12-month period, that person, if he or she continues to maintain the reacquired domicile into re-enrollment at an institution of higher education, may re-enroll at the in-state tuition rate without having to meet the usual 12-month durational requirement. However, any one person may receive the benefit of this provision only once.

Change of Status. A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) must be classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual enrollment. A residence status classification once assigned (and finalized pursuant to any appeal properly taken) may be changed thereafter (with corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic year.

Transfer Students. When a student transfers from one North Carolina public institution of higher education to another, he or she is treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence status classification for tuition purposes.

Appeal Procedure. A student may request a review of decisions by the Admissions Office or Office of the Registrar relating to in-state or out-of-state residence for tuition purposes through the Auxiliary Services Office. Appeals should be submitted in writing, stating all the pertinent facts. Backup material should accompany the appeal. Address, telephone number and social security number should be included with the appeal.

Summary of Tuition and Fees Per Semester

Following are tuition and fees authorized for 1990-91. They are subject to change by the appropriate authorities.

UNDERGRADUATES			GRADUATES*		
	Resident	Non-Resident		Resident	Non-Resident
0 Hrs.	$120.25	$ 686.50	0 Hrs.	$120.25	$ 686.50
			0 Hrs. (Thesis Only)	119.00	399.00
1-5 Hrs.	120.25	686.50	1-2 Hrs.	120.25	686.50
6-8 Hrs.	256.50	1389.75	3-5 Hrs.	190.50	1323.75
9-11 Hrs.	447.00	2146.75	6-8 Hrs.	336.50	2026.25
12 or more Hrs.	517.25**	2783.00**	9 or more Hrs.	517.25**	2783.00**

Post-baccalaureate students who are taking* **only *undergraduate courses will pay tuition and fees at the undergraduate rate. Post-baccalaureate students taking one or more graduate credit courses will pay tuition and fees at the graduate rate for* **all** *courses.*

***The following Student Activities Fees are included in the full-time tuition and fee amounts. Fees per semester are:*

Activity Facility	*$ 20.00*
Student Center Facilities	*10.00*
Student Activity	*15.50*
Student Center Operating	*49.50*
Physical Education Facilities	*6.00*
Health Center	*35.00*
Athletic	*88.00*
Intramural	*10.50*
Student I.D.	*1.00*
Telephone Registration	*1.00*
Total fees per full-time student, per semester	*$236.50*

Room and Board Per Semester*

Residence Hall Apartment	$809.00 to $940.00
Residence Hall — Double Room	$675.00
Residence Hall — Single Room (if available)	$1,019.00
*21-Meal Plan	$621.00
*14-Meal Plan	$604.00
*10-Meal Plan	$583.00
* 5-Any Meal Plan	$254.00

Note: Residence hall space is not available to married or part-time students.

**Also see Auxiliary Services*
Meal plans for 1990-91 have been modified (see page 14). Prices are subject to change.

Special Assessments. Many courses carry special assessment fees to cover the cost of supplies or special material consumed in the courses or labs. A complete list of special assessments can be found in the following chart.

Special Assessments (per semester, except where indicated otherwise)

Performing and Visual Arts Fee	$20.00 to $90.00
Nursing Malpractice Insurance (per academic year)	$12.50
National League for Nursing Achievement Test (per test)	$27.00
Scuba Diving (HPED 2219)	$60.00
Advanced Scuba Diving (HPED 2220)	$35.00
Physical Education Course Fee	$15.00
Anthropology Lab Fee	$10.00
Cooperative Experience Fee	$65.00
Engineering Laboratory Fee	$25.00
Biology Lab (upper level)	$15.00
Biology Lab (lower level)	$10.00
Chemistry Lab (upper level)	$15.00
Chemistry Lab (lower level)	$10.00
Earth Science Lab (upper level)	$15.00
Earth Science Lab (lower level)	$10.00
Computer Science Lab (upper level)	$15.00
Computer Science Lab (lower level)	$10.00
Physics Lab (upper level)	$15.00
Physics Lab (lower level)	$10.00
Psychology Lab Fee	$10.00
Health Education Course Fee	$38.00
Microcomputer Lab Course Fee	$10.00
Nursing Lab Fee	$15.00
Architecture Major General Student Fee (per academic year)	$60.00

continued on next page

Application Fee. Applicants for admission are required to submit a $15 application fee with the application form. The fee is not deductible and is not refundable.

New Student Fee. All new degree-seeking undergraduate students (freshmen and transfers) will be required to pay a one-time $25 new student fee.

Housing Deposit. Admission to UNC Charlotte does not guarantee residence hall space. Arrangements for on-campus housing are made, after admission, with the Director of Residence Life. On-campus housing is not available for married or part-time students.

All housing applications must be submitted with a $100 deposit. The deposit is refundable, minus any outstanding damages and charges, upon departure from the residence life system. No deposit refunds for fall semester are made after June 1. No refunds for spring semester are made after November 30. All students living in the residence halls will have an $8 Residence Hall Association fee included in their semester housing charges.

Student Activities Fee. A part of the general fee provides students with a program of cultural, recreational and entertainment activities. It pays for admission to many athletic contests, dramatic productions, activities sponsored by the University Program Board, social and entertainment functions, and for subscriptions to the campus newspaper and literary magazine.

Graduation Fee. Each member of the graduating class must pay a graduation fee of $25 at the time he/she applies for the degree. This fee includes the cost of the diploma and the cap and gown. No reduction of the fee is allowed for those receiving degrees *in absentia*. For graduate students, the cost of renting a hood is in addition to the $25 charge.

Late Registration Fee. A fee of $10 will be charged for those registering after the designated registration period each semester. *This fee is not refundable.* Applicants completing their applications before the initial registration day but whose applications could not be processed in time will not be assessed the late registration fee if required to register late.

Credit By Examination Fee. Fees for credit by examination are as follows: A written examination for a course will require a fee of $15. A laboratory examination requiring the arrangement of such things as laboratory materials will require a fee of $25. A combination of a laboratory and written examination will require a fee of $30.

MOTOR VEHICLE REGISTRATION FEES

Students attending The University are required to register their motor vehicles(s) in order to park such vehicles on campus. Presentation of State vehicle registration or appropriate proof of ownership shall be required. Registration for the academic year begins the day the residence halls open. Enforcement begins the first Monday after classes begin in the fall and spring and the first day of classes for each summer session.

The motor vehicle registration fee for students, faculty and staff members is as follows:*

$98 per academic year beginning with the fall semester;
$60 for the period beginning with the spring semester and ending with the beginning of the next fall semester;
$43 for the period beginning with a summer term and ending with the beginning of the next fall semester;
$35 for each semester, fall and spring and summer, in parking areas designated for night students after 4 p.m.;
$10 for one additional motor vehicle; and
$ 3 for a replacement sticker from one category to another or for a second decal using the same license plate number as currently registered with presentation of residue of old decal.

**Fees are subject to change.*

Night decals are available and are valid in any lot after 4 p.m. Cars with night decals must be parked at meters or visitor parking deck from 8 a.m. to 4 p.m.

Temporary Parking Permits. Temporary parking permits are available for persons with cars registered on campus but who are required to drive a non-registered car for a short period while the registered car is being repaired, for new employees prior to receipt of first paycheck and for short-term visitors of resident status.

Penalties for Parking Violations. Violators of University Parking Regulations are subject to monetary penalty of from $5 to $100, depending on the seriousness of the violation. If not paid in five working days, the penalty will be doubled and applied to the member's account with The University and collectable as a bad debt. Subsequent registration may be withheld for non-payment.

Parking tickets must be appealed in writing. Forms are available and should be submitted to the Traffic Department, 134 King.

Refunds

TUITION AND FEES REFUNDS

A student who officially withdraws from The University will receive a refund as follows:

a. during the first two weeks of the semester, a 90 percent refund of tuition and fees;
b. during the third and fourth weeks of the semester, a 40 percent refund of tuition and fees.

After the first four weeks, tuition and fees are not refundable.

Exception: Charges are refundable by administrative action on a prorata basis for the unexpired portion of the term for the following reasons: death of the student, withdrawal for adequate medical reason as certified by the University student health center or family doctor, death in the immediate family which necessitates student withdrawal, and dismissal or suspension from school. Appropriate documentation must be submitted to the Registrar.

Summer School: A student who officially withdraws from The University as indicated below will receive a refund of the full amount paid less a registration fee of $10: regular summer session, during the first *five* class days; three-week session, during the first *three* days; two-week session, during the first *two* class days. Summer school housing charges are refundable on a prorata basis, based on the number of weeks occupied. No other refunds are authorized except as follows: death of student, withdrawal for adequate medical reason as certified by the University student health center or family doctor, death in the immediate family which necessitates student withdrawal, and dismissal or suspension from school.

HOUSING REFUNDS

The rental period for academic-year contracts is for the entire academic year (fall and spring semesters) continuing until the end of the spring semester, regardless of occupancy date after the fall semester begins. Students may terminate at the end of the fall semester with no penalty only by written notification to the Residence Life Office by 5 p.m. Nov. 30. The housing and dining agreement binds the student and/or guarantor to the full amount of charges for the academic year except as noted:

Effect of Cancellation

If cancellation date is:	*Student is charged:*
a. By 5:00 p.m. June 1 for fall semester or 5:00 p.m. November 30 for spring semester	No charge (deposit refunded)
b. From June 1 to day before published housing opening date (fall); or December 1 to one day prior to housing opening date (spring)	$100 (for forfeiture of deposit)
c. Housing opening date to end of semester	Housing fee for entire semester

Note: Withdrawals from UNCC for academic or medical reasons will be refunded based on a pro-rata share of housing and dining. Cancellation dates for 12-month and summer school housing are different from the academic year cancellation dates. All dates are defined in detail in the specific housing contract of interest. Be sure to read the contract carefully.

Appeal Procedure

Appeals to the above policy should be submitted in writing to Auxiliary Services, UNCC, Charlotte, NC 28223, or to the office in 101 King Building.

Financial Aid

UNCC administers financial aid without regard to race, color, national origin, religion, sex, age or handicap.

The University offers a comprehensive program of student financial aids (scholarships, grants, loans and part-time employment) to assist both graduate and undergraduate students in meeting educational expenses. Reasonable educational expenses include tuition and fees, room and board, books, supplies, transportation, miscellaneous personal expenses and expenses related to maintenance of a student's dependents.

Eligibility. The programs of student financial aid are administered according to a nationally accepted policy that the family, meaning parents (or those acting in place of parents) and/or spouse, is responsible for a student's educational expenses. Therefore, eligibility for financial aid will be determined by a comparison of a budget (educational expenses as defined above) for the period of attendance with what the student's family can reasonably be expected to contribute.

A financial aid applicant will be considered for available assistance for which he/she is eligible if the student:

1. Completes the application process and related forms only after thoroughly reading all instructions.
2. Completes the admission application process and is accepted for enrollment at UNCC.
3. Is working toward a degree and not simply taking courses.

APPLICATION PROCESS

It is necessary to complete one form to apply for the following programs:

Pell Grants (Undergraduates only)
Supplemental Educational Opportunity Grant
UNCC Grants
North Carolina Student Incentive Grant (NCSIG)
Stafford Student Loan* (Guaranteed Student Loan)
Perkins Loan
UNCC Loans
College Work-Study Program
UNCC Scholarships

To apply for these programs, a student *must complete the Financial Aid Form of the College Scholarship Service* and mail it to that organization in Princeton, New Jersey. These forms are available in the UNCC Financial Aid Office and in high school counseling offices.

*The Stafford Student Loan requires a separate application in addition to the Financial Aid Form.

Certain UNCC scholarships require special application forms, which are available in the UNCC Student Financial Aid Office.

RENEWAL PROCESS

Renewal of financial aid is based upon a student's making satisfactory academic progress defined as accumulating at least 10 earned hours for each semester of enrollment at The University. The Financial Aid Form will be required each year that a student applies for financial aid.

FINANCIAL AID PROGRAMS

Loans

Perkins Loan—Applicants may request amounts based on financial need up to a total of $9,000 for a four-year degree and an aggregate total of $18,000 for graduate study. The interest rate is 5 percent, with repayment beginning nine months after graduation. To apply, an individual must complete the Financial Aid Form.

Stafford Student Loans—Qualified undergraduate applicants may borrow up to $2,625 per year for the first two years of study, and up to $4,000 per year for the remainder of undergraduate study. Graduate students may borrow up to $7,500 per year. The interest rate is 8 percent, and repayment begins six months after the borrower ceases to be a student.

Short-Term Emergency Loans—Students may borrow up to $100 for unanticipated expenses which occur during the semester and up to $500 for tuition expenses. The loans have a $1 service charge, but no interest is charged. Loans must be repaid within 30 to 60 days. Funds for these loans are privately donated and include the following:

Alpha Delta Kappa, N.C. Alpha Chapter
Charlotte—North Rotary Club
R.P. Stephen Davis Memorial Fund
English Graduate Student Loan Funds
Housewares Club of the Carolinas
International Student Loan Fund
Kappa Alpha Psi Fraternity
Marlin McCasland Memorial Fund
Ada Pearson Fund
Schoenith Student Loan Fund
UNCC Women's Organization

Grants

Pell Grants—These are for undergraduate students and can range from $250 to $2,300, based on the student's financial need, state residence and other costs of attendance. It is an entitlement program, meaning that any student who applies and is determined to be eligible will receive funds.

Supplemental Educational Opportunity Grant—These are for undergraduate students and range from $200 to about $1,000. Eligibility is based on financial need and is determined within the UNCC Financial Aid Office.

North Carolina Minority Presence Grant Program—Under the University of North Carolina Board of Governors general Minority Presence Grant Program, black students may be eligible for special financial assistance if they are residents of North Carolina, enrolled for at least three hours of degree-credit coursework, and demonstrate financial need.

UNCC Grants—UNCC administers several other grant programs funded by the State of North Carolina and requires North Carolina residency for consideration. These are available to both graduate and undergraduate students who apply by the established priority date of April 15.

Graduate Assistantships. The University has a limited number of graduate assistantships in the fields of biology, business administration, chemistry, computer science, education, engineering, English, geography, history, mathematics, political science, psychology and sociology. Such financial support will be extended to other areas of study as rapidly as resources become available. Application for a graduate assistantship should be filed in writing with the appropriate department through the Admissions Office not later than the February preceding the fall semester for which the assistantship is desired.

Graduate Fellowships. The Microelectronics Center of North Carolina (MCNC) has allocated a limited number of $15,000 fellowships to UNCC for outstanding students in graduate programs relevant to microelectronics. Information about MCNC Fellowships is available from the Admissions Office.

Employment. The Center for Student Employment and Career Services assists students in locating work on campus. The University participates in the federal Work-Study Program and attempts to match students with jobs related to their academic interests. Graduate students as well as undergraduate students may request University employment. However, all graduate students seeking employment must have the approval of their department heads.

The Center for Student Employment and Career Services assists students in obtaining part-time employment on campus, full-time or summer employment off campus and, whenever possible, endeavors to relate work experience to career objectives. Job listings and assistance are available in the Job Location and Development Office, Room 123, King Building. (See page 15 for further information.)

Education for the Vocationally Handicapped. Students who have suffered a disability which renders them vocationally handicapped are eligible for aid provided by the North Carolina State Division of Vocational Rehabilitation. This aid takes the form of services which include vocational counseling and guidance and placement. Payment of expenses such as training, medical treatment, room and board, books, fees and tuition may be available. A vocational rehabilitation officer is available in Charlotte for interviewing applicants. Appointments may be made by contacting Vocational Rehabilitation Services located at 1928 E. Independence Blvd., (704) 342-6218.

Veterans Benefits. The Office of the Registrar works with the Veterans Administration to assist in administering the various programs of benefit to veterans or eligible relatives of veterans. The veterans clerk in the Registrar's Office certifies enrollment and transmits necessary credentials and information to the proper Veterans Administrative Office.

Admission to The University should be obtained before the student makes application for veteran's benefits. Applicants must be accepted into a degree program to receive benefits.

In order to be eligible for the full monthly allowance under any of the above laws, an undergraduate student must be enrolled for 12 or more semester hours of work, while a graduate student must be enrolled for nine or more semester hours. Those enrolled for fewer semester hours than the limits stated above will be eligible for part-time compensation. Students are responsible for reporting any change in enrollment status to the veterans clerk in the Office of the Registrar.

Children of Veterans. The North Carolina Department of Veterans Affairs awards scholarships for the children of certain deceased or disabled veterans. Those awarded "full" scholarships are entitled to tuition, mandatory fees, board allowance and room allowance; those awarded "limited" scholarships are entitled to tuition and mandatory fees. All inquiries should be referred to the North Carolina Division of Veterans Affairs, 227 East Edenton St., Raleigh, NC 27601, telephone (919) 733-3851.

Before the time of registration, each eligible student who wishes to enter The University should: (1) apply for admission following University procedures, and (2) apply for a scholarship award to the North Carolina Department of Veterans Affairs.

Scholarships

UNCC offers a comprehensive undergraduate scholarships program. Some of these are awarded entirely on the basis of merit, but individual financial need is a consideration in the awarding of many of them. The University's major merit awards are the Alumni Scholarships, the Cameron Scholarships, the Colvard Scholarships, the Bonnie E. Cone Scholarships, and the Stone Scholarships.

The Alumni Scholarships for Merit, awarded for the first time in 1978, will be awarded annually to continuing students of The University who have proven outstanding scholastic attainment, participated in University and/or community activities, and demonstrated campus leadership. The scholarships were established to recognize outstanding full-time students and to encourage their continuing involvement and interest in the activities of The University. Information concerning the scholarships will be distributed to each department and college within The University each year prior to the award and will contain material outlining application procedures for the scholarships.

The C.C. Cameron Scholarships established by First Union Corp., honors Mr. C.C. Cameron, who served as chairman of First Union and as chairman of the UNCC Board of Trustees. The purpose of the Cameron Scholars program is to bring outstanding students to UNC Charlotte. Recipients will be selected on the basis of academic achievement, demonstrated leadership and service to others. Cameron Scholars will be provided financial assistance and work experiences which will encourage intellectual growth and stimulate the will to achieve full potential.

The Colvard Scholarships for Merit honor Dr. Dean Wallace Colvard, first chancellor of The University of North Carolina at Charlotte, and his wife, Martha, who were instrumental in founding Friends of UNCC. Dr. and Mrs. Colvard have personified the quest for excellence at UNCC.

The Colvard Scholarships for Merit will be awarded to applicants judged on the basis of their achievements in high school, college aptitude tests and their promise of making meaningful contributions to society. Their roles as leaders and their service to school and community will be weighed carefully.

The Bonnie E. Cone Scholarships for Merit have been endowed by Clara McKay (Mrs. Charles H.) Stone of Charlotte and other friends of Charlotte College. The scholarships honor Dr. Bonnie E. Cone, founder and developer of Charlotte College, upon which base UNCC grew.

The Bonnie E. Cone Scholarships for Merit are awarded annually to students having high moral character and proven scholastic attainment and whose further education at The University will, in the judgment of the scholarship committee, enhance the citizenship of the recipients and advance the service of The University of North Carolina at Charlotte as an institution of excellence. A student may be recommended by the high school principal or community college president to be eligible for this scholarship.

The Fretwell Scholarships were established in 1990 in recognition of Dr. E.K. Fretwell Jr., chancellor of UNC Charlotte from 1979 to 1989. The primary purpose of the awards is to attract students of great potential to the University.

The scholarships' founders believe that such students are of great value to the University in that they stimulate and challenge fellow students and faculty members. Fretwell Scholarships are awarded to graduating high school seniors based on achievements in school, college aptitude test scores, service to school and community, potential for making meaningful contributions to society, and potential for leadership.

The Cameron Morrison Scholarships, first awarded in 1985, were established as a memorial to former Governor and Mrs. Cameron Morrison. The scholarships recognize those students who are public high school graduates from Mecklenburg and Richmond Counties who seek self-improvement and demonstrate initiative and ability. The awards also are based on financial need and 40 awards of $500 each are made annually. To receive consideration, students must complete the general University application for financial assistance. Continuing students with a 3.0 or higher cumulative grade point average and entering students ranking in the upper 10 percent of their high school graduating class will be given preference.

The Clara McKay Stone and Charles H. Stone Scholarships were established in 1986 and first awarded in 1987. Mr. and Mrs. Stone were early supporters and major benefactors of The University. Through their efforts were established the Bonnie Cone Scholarships, the Charles H. Stone Professor of Chemistry, the Charles H. Stone Professors of American History, and the Charles H. Stone Collection of the University Library.

The purpose of the Stone Scholarships is to provide scholarship assistance for worthwhile and deserving students and applicants for admission to The University who have high moral character and whose education at The University will better enable the recipients to live worthwhile and productive lives and to further the service of the University to society. The fund provides both merit awards and awards for students who are deserving, but may not have the ability for high academic attainment, and who are in need of financial assistance in order to further their education at the University.

Detailed information about the scholarships named above, including minimum qualifications, selection processes and the amount of the stipends may be obtained from the Office of Student Financial Aid at UNCC.

In most cases, there is no special application for the scholarships which follow, and all aid applicants will be considered unless the scholarship is noted as an exception. Normally, those students with demonstrated need and a grade point average of 3.5 or better will be considered for scholarships.

Scholarships

Betty Adkins Memorial Scholarship
**Air Force ROTC
**Alcoa Foundation
Allendale Services, Inc
Alpha Chapter of Alpha Delta Kappa
Alpha Sigma Chapter of Delta Kappa Gamma
Altrusa Club of Charlotte
*Alumni Scholarships
American Business Women—Carolina Charter Chapter
American Business Women—Charlotte Heritage Chapter
American Business Women—Mecklenburg Chapter
American Business Women—Queen Charlotte Chapter
American Society for Metals
**American Society for Quality Control
American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.
Paul Anthony Memorial Scholarship
Architecture Scholarships
**Army ROTC
J. Murrey Atkins Scholarship
Brycie Baber Scholarships
Barnes and Noble Scholarship
William H. Barnhardt Memorial Scholarship
BASF/Brooks
Harold Crusius Bird Scholarship
Tom Black Memorial Scholarship
*Blair-Boone-Dudley Scholarships
R.G. Brice Scholarships
*C.C. Cameron Scholarships
Cannon Scholarship for Nursing
Carolina Brokers Scholarship
Carrousel Award
Wayland Cato, Jr., Scholarship
Charlotte Association of Insurance Women
Charlotte Board of Realtors
Charlotte Business and Professional Women
Charlotte Civitan Club
**Charlotte Engineers Club Scholarship
Charlotte Food Brokers
**Charlotte Kiwanis Scholarships
Charlotte North Rotary Club Student Loan Fund
Charlotte Panhellenic Congress
Charlotte Rotary Club
Charlotte Transit
Charlotte-Mecklenburg—NCEA
Charlotte Women's Club
Rotary Club
**Chick Fil-A of Southpark Scholarship in Philosophy
**Ruth C. Clarke Scholarships in Nursing
*Dean and Martha Colvard Scholarships
*Bonnie E. Cone Scholarships
Bonnie E. Cone by Altrusa Scholarship
**Creative Arts General Scholarship
**Creative Arts Music Scholarship
**Creative Arts String Scholarship
**Creative Arts Theatre Scholarship
Jim Crockett Memorial Loan
**Crowder Construction Scholarships
**Cummins Atlantic
Danielson
Sanford V. Davenport
Cleve Davis
Dr. A.P. & Francis Dickson
Dixon Odom
Paul Douglas (Teachers)
Duff-Norton
Duke Power
Elliott-McArthur
**Ernst & Whinney Accounting Scholarship
Executive Women International
*Fieldcrest Cannon
**A.J. Fletcher Music
Henry B. Fowler Memorial
James Edward Fox Scholarship
John L. Fraley Scholarship
**French Scholarship
Fretwell Scholarships
Garinger Scholarship
Otto L. Giersch Scholarship
**Joris E. Gilbos French Scholarship
**Joris E. Gilbos German Scholarship
Miley Columbus Glover Memorial
Nicholas T. Goudes Foreign Language Scholarship
Greek Ladies Philoptochos Society Scholarship
Fleet Green Jazz
Bronna Watson Hackney Scholarship in Nursing
Harry P. Harding Scholarship
Charles R. and Ailene S. Harris Engineering Scholarships
Harris-Teeter Enterprise Scholarship
Thad Harrison
Harrison-Wright Scholarship
Henkel Corp., Foreign Languages Scholarships
Don S. & Margaret M. Holt
*Holt-Tate Scholarship
Ingersoll-Rand
International World Trade Scholarship
**Institute of Transportation Engineers
**Jefferson Pilot Foundation Scholarship
Jeld-Wen-Wenco Scholarship
E. Dunbar Jewell and Associates Scholarship
Junior Achievement
Kappa Sigma Fraternity Plenipotentiary Award
**Katapodis Award
Kimley-Horn Scolarships
**The George B. King Civil Engineering Scholarship
Lake Forest Garden Club
Lambda Chi Alpha's Witherspoon Scholarship in Religious Studies
Law Enforcement Memorial

Require a special application.
***These scholarships are awarded on recommendation by committees in the academic departments and may require special application.*

James Lee Love
James M. Love
John Paul Lucas, Jr. Scholarship
**LUWA Corporation Engineering Scholarship
**Pierre Macy Scholarship
John McArther
J.C. McCormack Rotary Scholarship Fund
William Hugh McEniry Memorial Award
McEwen Scholarships
*Mecklenburg County Medical Society
**Mecklenburg General Contractors Association Scholarship
**Military Order of the Purple Heart
Cal and Fay Mitchell Scholarship
Cameron Morrison Scholarships
**Mumaw Engineering
Mutual Savings and Loan of Charlotte, NC, Scholarship in Business Administration
Delores S. Myerly Memorial Scholarship
Mary Margaret Myers Scholarship Fund
**National Association of Accountants—Herbert Conner Scholarship
National Gypsum Company—Gold Bond Building Products Division Scholarship
J. Henry Nichols Scholarship
Walter E. Norem
**North Carolina Association of the American Institute of Certified Public Accountants Charlotte Chapter
North Carolina Association of Supervisors of Elections
North Carolina Frozen Foods Association
N.C. Teaching Fellows
Nursing Alumni Scholarship
Omicron Delta Kappa
Otto Engineering
Samuel Iredell Parker Scholarships
Artemis J. Paschal Scholarships
Jim Patterson Memorial Scholarship
**Lynn Hauser Pearce Memorial Scholarships
J.N. Pease Associates Engineer Scholarships
**Peat, Marwick, Mitchell Accounting Scholarship
PENCA
Piedmont Club Foundation
Piedmont-Carolinas Chapter of the Institute of Internal Auditors
Piedmont Chapter CRSI
Pilot Club (Myrtle Fink) of Charlotte
**Pneumafil Engineering Scholarship
**Price Waterhouse Foundation
Cecil Prince Scholarship
Proctor Foundation Scholarship
**Professional Engineers Association—South Piedmont Chapter
**Professional Engineers—Ladies Auxiliary
**Provost-Firpo French Scholarship
Puette Scholarship
Quota Club of Charlotte
Ramseur Tutoring Fund
George A. Rawlings Scholarship
Frank R. & Sara G. Rayburn
Dean Allen Reep
Refabco, Inc., Scholarship
**Ramsey Products Engineering Scholarship
**Rexham Corporation
Kathy Reynolds Scholarship in Athletics
Roger Reynolds Scholarship in Business
George H. Roberts
Ralph S. Robinson Family Scholarship
**Rodgers Builders, Inc., Scholarships
Edwin L. Rogers Scholarship in Economics
**Touche Ross and Company
**Marie Rowe Scholarship
**Oliver Rowe Scholarship
Sandox
Servomation of Charlotte
Lonnie Sides Memorial
Sheldon P. Smith Scholarships
Sodyeco, Inc., Scholarship
**Southern Bell Minority Scholarship in College of Engineering
Southern Piedmont Chapter ASHRAE
**Southern Engineering Scholarship
**Spanish Scholarship
Joseph Carl Stepp Memorial
Jan Stewart Scholarship
Charles H. and Clara Stone Scholarship
C.M. and M.D. Suther Scholarship
A.K. Sutton Scholarships
*Tate-Culbertson Scholarships
Technical Theatre Work
Mr. and Mrs. J.R. Thompson
Townsend Engineering
Travelers Insurance Scholar
UNCC Women's Organization
**Unisys
United Carolina Bank Theatre
Loch Walker Scholarship Fund
**Robert M. Wallace Award
Mary Margaret Walsh Scholarship
Lettie Pate Whitehead Scholarships
Earle Whitton Scholarship
Mr. and Mrs. J.L. Winningham
**B.W. Witherspoon Air Force ROTC Award
**B.W. Witherspoon Army ROTC Award
*Joe A. Witherspoon Scholarship
Daniel H. Wolfe Scholarship
Women's Allied Auxiliary of N.C. Motor Carriers
World Trade Scholarship
Zeta Tau Alpha Foundation
Zonta Club of Charlotte

Require a special application.
***These scholarships are awarded on recommendation by committees in the academic departments and may require special application.*

Academic Regulations and Degree Requirements

Student Responsibility

Every student is responsible for the proper completion of his/her academic program, for familiarity with the *University Catalog,* for maintaining the grade average required and or meeting all other degree requirements. The adviser will counsel, but the final responsibility remains that of the student.

A student is required to have knowledge of and observe all regulations pertaining to campus life and student deportment. The University has enacted two codes of student responsibility: **The UNC Charlotte Code of Student Academic Integrity** and **The UNC Charlotte Code of Student Responsibility** which are summarized on pages 24-25. As students willingly accept the benefits of membership in the UNCC academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNCC community cooperation and make those benefits possible.

Every student is responsible for maintaining communication with The University and keeping on file with the Registrar's Office at all times a current address, including zip code and telephone number.

Every student, while associated with The University, is expected to comport himself/herself in campus and community life in a manner that will reflect credit upon the student and The University.

Academic Regulations

ASSIGNMENT OF ACADEMIC ADVISERS

Each student entering a degree program at The University of North Carolina at Charlotte is assigned an academic adviser or advisory committee in his/her major field. Advisers are also provided for students who have not yet chosen a major field. The adviser assists the student in developing the plan of study best suited to his/her prior preparation and objectives. This assistance is not a substitute for the personal responsibility of the student described in the preceding section.

CATALOG POLICIES

The *Catalog* is not an irrevocable contract. Regulations published in it are subject to change by The University at any time without notice. University regulations are policy statements to guide students, faculty and administrative officers in achieving the goals of the institution. Necessary interpretations of these policies will be made by the appropriate authorities with the interest of the students and the institution in mind. Students are encouraged to seek information as they require it about the application of any policy.

Each new edition of the catalog becomes effective at the opening of the fall semester following its publication. To receive a degree, an undergraduate student must complete satisfactorily all requirements described in the catalog in effect at the time of first enrollment as a degree student at The University or all requirements described in the catalog in effect at the time of graduation. A graduate student must complete satisfactorily all requirements described in the catalog in effect at the time of first enrollment as a degree student or all requirements described in the catalog in effect at the time of admission to degree candidacy. Any student who changes from one curriculum to another curriculum must meet catalog requirements of the new curriculum in effect at the time of the change. Any student who leaves The University or changes to another curriculum for a period of one calendar year or longer and then returns to The University or to the original curriculum will be required to meet catalog requirements in effect at the time of return.

Exceptions to these policies may be necessitated by changes in course offerings, degree programs or by action of authorities higher than The University. In that event, every effort will be made to avoid penalizing the student.

REGISTRATION

The registration process takes place on designated days at the opening of each semester and each summer term prior to the beginning of classes. In addition, students who are already enrolled are given the opportunity to register in advance for the subsequent term during each regular semester. New undergraduate students who participate in one of the summer orientation and advising sessions are registered for the following fall semester during the session.

Late Registration. Late registration takes place on designated days after the beginning of classes each term. Except under special conditions, no student will be permitted to register after the last day of late registration as announced in the calendar for each semester and summer term. A late registration fee will be charged.

Registration for Credit. No credit will be awarded to a student for a course unless he/she is properly registered for it. Graduate credit will not be awarded unless the student is properly registered in a course which has been approved for graduate credit.

All students, including visitors and non-degree students, are required to meet course prerequisites and to obtain the required permissions to enroll in courses indicated in the Schedule of Courses.

Adding or Dropping a Course. In order to add or drop a course after the registration period, a student must follow and complete the drop/add procedure as prescribed by the Registrar's Office. No student will be permitted to add a course or change sections of a course after the last day of late registration as announced in the calendar for each semester and summer term.

A student who drops a course after the last day to receive a refund and drop without evaluation will receive a grade of *W*. No student will be allowed to drop a course after the deadline for dropping a course as announced in the academic calendar for each semester or summer term unless there are extenuating circumstances approved by The University. A student who is taking only one course must withdraw officially from The University if he/she drops the course.

Withdrawal. Any student voluntarily leaving The University before the close of the term must withdraw officially. A student initiates the withdrawal procedure and files the completed form at the Registrar's Office. A student who is unable to appear in person may notify the Registrar's Office of withdrawal by letter. A withdrawal is effective when the form or letter is received by the Registrar's Office. A student who withdraws from The University two weeks or more before the last day of class will receive the grade of *W* for all courses in progress. In order to return to The University, an undergraduate student must apply and be accepted for readmission unless the withdrawal occurred during a summer session in which case a readmission application is not required. Graduate students who return to The University within two years are not required to apply for readmission.

Any student who leaves The University before the close of a term without withdrawing offically will receive a failing or unsatisfactory grade *(F* for undergraduate credit and *U* for graduate credit) in each course for which he/she is registered. Enrollment will be terminated for any graduate student who receives a *U* and he/she will be required to reapply for admission.

Two weeks prior to the last day of class (or as close to half of the summer term as possible) is the last date withdrawal transactions are to be processed. (Students who withdraw after that date will receive a grade of *F* or *U.)* No student will be allowed to withdraw after the deadline unless there are extenuating circumstances as approved by The University.

Dual Undergraduate/Graduate Registration. Undergraduate students at UNCC who are required to take fewer than 12 semester hours of undergraduate work to fulfill all requirements for the bachelor's degree may be allowed during their final semester to enroll in certain courses for the purpose of obtaining graduate credit. Authorization for dual undergraduate/graduate registration may be obtained by submitting to the Dean of the Graduate School a Special Request Form approved by the student's undergraduate academic adviser, the instructor(s) of the graduate course(s), and the dean(s) of the college(s) offering the graduate course(s), accompanied by the regular application for admission to graduate study and supporting credentials. The total hours to be carried in this status shall not exceed 12 hours, of which no more than nine may be for graduate credit. On the basis of work attempted prior to the final semester, such student must meet the grade point criteria for admission to a graduate degree program at The University. No course for which credit is applied to an undergraduate degree may receive graduate credit. Permission to take graduate courses under dual registration does not constitute admission to any graduate degree program at The University.

Consortium Registration. The Charlotte Area Educational Consortium offers an inter-institutional registration during the fall and spring semesters for *undergraduate* students at the following institutions.

Barber-Scotia College
Belmont-Abbey College
Central Piedmont Community College
Davidson College
Gaston College
Johnson C. Smith University
Queens College
UNC Charlotte
Wingate College
Winthrop College
York Technical College

Under this program, a full-time undergraduate student may take courses *not offered at UNCC* at one of the other participating institutions and have them appear on his/her transcript and be computed in his/her grade point average at UNCC. The registration process is initiated in the Registrar's Office and requires the approval of the student's college dean.

Inter-Institutional Registration. An inter-institutional registration program is available for a limited number of undergraduate and graduate students with the University of North Carolina at Greensboro, North Carolina State University, University of North Carolina at Chapel Hill and Duke University. The registration process is initiated in the Registrar's Office and requires the approval of the student's college dean.

Auditors. With the consent of the instructor, any person eligible for admission to The University as either an undergraduate or graduate student may register as an *auditor* for any class in which space is available. Fees and procedures are the same as those for a credit enrollment.

No student will be allowed to change audit/credit designation of a course after the first two weeks of a regular semester (or a proportional period for summer school).

The participation of auditors in class discussion and in tests or examinations is optional with the instructor. Auditors recive no University credit, but they are expected to attend class regularly.

A formal record of the audit on the student's transcript is entered at the discretion of the instructor at the end of the course. The procedure for adding or dropping an audit course is the same as for credit enrollments.

COURSE LOAD

A course load of 15 semester hours constitutes a normal full semester program for undergraduates, but a student may register for less work. A student enrolled in 12 or more semester hours is considered to be a full-time student by The University.

An appropriate course load is dependent on two factors: scholastic ability as reflected by the student's academic history and available study time. The latter is affected by such factors as employment, family responsibilities and extracurricular activities. The student should understand that successful academic achievement requires significant amounts of time. In general, the student should expect to devote a *minimum* of two hours per week outside of class for each credit hour taken. For example, enrollment in 15 hours would require at least 30 hours of outside preparation per week. Many courses will require more than two hours of preparation. Generally, an undergraduate student should not register for more than 18 semester hours during a semester.

DEGREE OR MAJOR PROGRAM

Declaration of a Major. Undergraduate students must declare and be accepted into a major field of study by the time they have earned 80 semester hours of credit. Students will not be allowed to remain in the "undecided" category after they have earned 80 hours of credit.

Change of Degree or Major Program. An undergraduate student may change from one degree program or area of academic concentration to another when space is available provided he/she meets the prerequisites for admission to the new program and has appropriate written approval, a "Declaration of Program," filed at the Registrar's Office.

Declaration of Program forms will not be processed during the period from one week before advance registration through one week after advance registration.

ATTENDANCE

The instructional work of The University is designed for class attendance, and it is assumed that students will be present. Students who miss classes will be responsible for the work of those periods. A missed test may cost the student the advantage of a grade to be counted toward the final estimate since instructors are not required to give make-up tests.

No undergraduate student may expect to receive a favorable evaluation unless he/she has attended at least 75 percent of the total class hours.

In the event of a conflict between class attendance and other scheduled University activities; class attendance takes precedence.

Disenrollment. At the discretion of the department offering a course, a student may be disenrolled from a course section if he or she does not attend the first scheduled meeting of the section. The department chair has the responsibility for providing timely notification to the student who is disenrolled.

GRADING POLICIES

Grade Reports. All students enrolled in The University receive reports of final grades from the Registrar after the close of each term. The reports are mailed to the student at the address designated by the student.

Special *reports of unsatisfactory achievement* are sent to the students identified by the faculty near the middle of each regular semester.

Final Grade Changes. When a grade of other than *Incomplete* is reported officially by an instructor at the end of a term, the grade is recorded by the Registrar and can be changed only if an error has been made in assigning or reporting the grade. When a grade is assigned consistent with University policy, only the instructor has the right to change a grade except as provided in the *Incomplete* grade policy. When an instructor reports a change for a grade other than *I,* the Change of Grade Form must be signed by his/her department chairperson and dean.

Students who think an error in grading has been made are advised to consult with the instructor as soon as the formal grade report is received. The erroneous grade must be reported to the instructor for correction during the next semester (fall or spring) in residence but no later than 12 months after the term in which the grade was assigned, whichever comes first.

Credits. The unit of measurement of University work is the *semester hour.* It ordinarily represents one lecture hour per week for one semester; however, a sequence of two or three laboratory hours is considered to be the equivalent of one lecture hour. Semester hours are also referred to as credit hours or credits.

Grades. Letters are used to designate the quality of work done. The University has separate grading systems for undergraduate and graduate students:

Undergraduate Grades

Letter	Meaning	Grade Points Per Semester Hour
A	Excellent	4
B	Good	2
C	Fair	2
D	Passing	1
F	Failing	0
I	Incomplete	*
IP	In Progress	*
W	Withdrawal	*
AU	Audit	*
NR	No recognition given for audit	*

Graduate Grades

Letter	Meaning	Grade Points Per Semester Hour
A	Commendable	4
B	Satisfactory	3
C	Marginal	2
U	Unsatisfactory	0
I	Incomplete	*
IP	In Progress	*
W	Withdrawal	*
P	Pass	*
N	No Credit	*
AU	Audit	*
NR	No recognition given for audit	*

Cooperative Education

S	Satisfactory	*
U	Unsatisfactory	

Pass/No Credit

H	Honors	*
P	Passing	*
N	No Credit	*

**Not used in computation of grade point average.*

Credit by Examination. A student currently enrolled at UNC Charlotte may pass a specially-prepared challenge examination and receive credit for a University course without having to do the normal coursework. The student contacts the chairperson of the department in which credit is sought to request administration of an examination. Since it may not be appropriate to award credit by examination for some courses, the decision to offer an examination is that of the department. If the chairperson authorizes an examination, the student is instructed to pay the fee for credit by examination (see page 44) and to bring the receipt of payment to the examination. Credit by examination will be indicated on the transcript, but no grade points will be awarded. Failure on such an examination will incur no grade point penalty. A department may allow a student to take examinations for courses not offered at UNCC, if it deems it appropriate to do so. No student may challenge a course for which either a passing or failing grade has been received at UNCC.

Grade of *I*. The grade of *I* is assigned *at the discretion of the instructor* when a student who is otherwise passing has not, due to circumstances beyond his/her control, completed all the work in the course. The missing work must be completed during the next semester (fall or spring) in residence, but no later than 12 months after the term in which the *I* was assigned, whichever comes first. If the *I* is not removed during the specified time, a grade of *F, U* or *N* as appropriate is automatically assigned. *The grade of* I *cannot be removed by enrolling again in the same course.*

Grade of *W*. No grade will be given for a course dropped on or before the last day to drop a course without record. After this period but before the last day to drop, a student who withdraws from a course will receive a grade of *W*. Courses given the grade of *W* do not count as hours at-

tempted. Only students with such extenuating circumstances as serious illness will be permitted to drop after the last day to drop. Unsatisfactory academic performance itself is not an extenuating circumstance. The time of withdrawal is the time the drop card or withdrawal form is accepted by the Registrar's Office.

Grade Point Average. The grade point average for an **undergraduate student** is determined by multiplying the number of grade points for each grade by the number of semester hours credit received in that course and adding all accumulated grade points together, then dividing by the total number of semester hours the student has attempted, except those for which the student has received a grade of *I, W, H, P, AU,* or *N.* When a course is repeated, no additional credit hours attempted accrue, and the hours earned and grade points of the previous grade are replaced by those of the current grade. These regulations do not apply to those courses listed as *"May be repeated for credit."* In computing the grade point average, only those credits attempted at the campus of The University of North Carolina at Charlotte or through the Charlotte Area Educational Consortium are included.

Repeating an Undergraduate Course. Whenever a course is repeated by an *undergraduate student,* no additional hours attempted accrue, and the last grade replaces the previous grade in computing the grade point average and in the assignment of academic credit. However, all entries remain a part of the student's permanent academic record. A student who has received a grade of *C, H, P* or better in a course may repeat that course only with the prior approval of the student's adviser, department chairperson and dean. Repeating a course more than once to raise a grade requires prior approval of the student's adviser, department chairperson and dean. These regulations do not apply to courses that may be repeated for credit. Questions concerning this policy should be directed to the Registrar's Office.

Pass/No Credit Option. Every student will be permitted during his/her *undergraduate* years to select a total of four courses in which he/she shall receive an evaluation of *H* (Honors), *P* (Pass), or *N* (No Credit). Only one such course will be selected during an academic year. Every course in The University is offered on this basis except when taken by a student for departmental credit toward his/her major or minor to satisfy all University degree requirements. Although units completed with honors or pass will count toward graduation, they will not be considered in the computation of the grade point average.

This option is designed to encourage curiosity, exploration and experimentation in areas where a student has strong interest but little or no previous experience.

The student must declare his/her intention to take a *Pass/No Credit* option by the end of the drop/add period in the semester. **Note:** Courses designated by the faculty to be graded only on a *Pass/No Credit* basis are not counted as part of this option.

TRANSCRIPTS OF RECORDS

Upon written request by the student, an official transcript of the academic record will be issued to the person or institution designated, provided that all the student's obligations to The University have been settled satisfactorily.

Each student is entitled to one transcript without cost, regardless of how early in his/her academic career the request may be made. A fee of $3 per copy should accompany subsequent requests.

Requests should reach the Registrar's Office at least one week before the date the transcript is needed.

CLASSIFICATION OF UNDERGRADUATE STUDENTS

At the beginning of each semester, regular students working toward a bachelor's degree are classified on the basis of minimum earned semester hours as follows:

Classification	Earned Semester Hours
Freshman	1-23
Sophomore	24-51
Junior	52-89
Senior	90 or more

REQUIREMENTS FOR CONTINUED ENROLLMENT

Undergraduate. In order to remain in good standing, the student's cumulative grade point average at UNCC must be 2.0 or higher. The grade point deficit is the number of additional grade points required to increase the student's cumulative GPA to 2.0. A student with a grade point deficit between one and 13 will be placed on academic probation, and this will be noted on the student's grade report.

A student will be suspended if the student:

a. has a grade point deficit of 14 or more, or
b. has failed to achieve good standing after two successive semesters on probation (excluding summer sessions).

No student shall be suspended at the end of the current semester if the student:

a. was in good standing at the end of his/her most recent semester of a regular academic year at UNCC or
b. in his/her first semester of enrollment at UNCC, or
c. has a 2.5 GPA for the current (excluding summer sessions) semester, or
d. is readmitted and was not enrolled at UNCC in the last two calendar years prior to the beginning of the current semester.

As a general rule, the summer session at The University of North Carolina at Charlotte shall be open to all students previously enrolled here, including students academically ineligible to continue during the regular academic year.

In computing the grade point average, only those credits attempted at the campus of The University of North Carolina at Charlotte or through the Charlotte Area Educational Consortium are included.

REQUIREMENTS FOR READMISSION AFTER ACADEMIC SUSPENSION OR TERMINATION

No undergraduate student under suspension will be readmitted to The University if he/she does not completely satisfy the entrance requirements as stated elsewhere in this *Catalog*.

In addition, an undergraduate student who has been suspended by reason of failure to satisfy the requirements for continued enrollment as stated above will be ineligible for readmission until (1) the expiration of the next semester following his/her suspension (except that he/she will be permitted to enroll in the summer session); (2) he/she meets the requirements for continued enrollment; (3) he/she earns an associate of arts (AA) degree from an accredited two-year institution; or (4) the student elects to use the "two year rule." If readmitted, the student will be expected to satisfy the requirements for continued enrollment.

At the end of the semester in which the student fails to meet the requirements for continued enrollment for the second time, he/she will be suspended and may be readmitted only after meeting the requirements for continued enrollment.

The student has recourse for meeting the requirements for readmission by attending summer sessions at UNCC.

Note: Readmission after suspension or after an incomplete semester, whether caused by withdrawal or suspension, is not automatic. A new application must be made and approval to return received. Included in the approval must be an acceptance from the department in which the student would carry his/her major. (See pages 33-34, *Readmission of Former Students.)*

APPEAL PROCEDURES

An undergraduate student or applicant may appeal decisions about admission or suspension by submitting a written statement to the Admissions Advisory Committee in care of the Director of Enrollment Services.

Other grievances relating to academic status are to be addressed by the college where the grievance arises, or if no particular college is appropriate, by the Director of Enrollment Services. Written procedures are available from the dean of each college and the Director of Enrollment Services.

TRANSFER CREDIT AND ADVANCED STANDING

Evaluation of transfer credits, advanced standing, CLEP and APP are coordinated through the Office of Enrollment Services. Prospective students who desire further information about policies and procedures for awarding credit should communicate with the Director of Enrollment Services.

UNCC will accept or transfer appropriate undergraduate credits earned through APP, CLEP, correspondence courses, extension courses, armed forces service schools, and college-level courses completed prior to graduation from high school. In addition, UNCC will accept or transfer appropriate undergraduate and graduate credits earned at another accredited institution or through credit by examination. Credit toward a degree is not awarded for Continuing Education Units (CEUs).

Advanced Placement Course Credit (APP). The University will accept appropriate undergraduate credits earned through Advanced Placement Program Tests completed prior to graduation from high school. Students must request that official Advanced Placement test results be sent directly to the Office of Enrollment Services for evaluation (UNCC code-5105). Prospective students who desire further information about policies and procedures for awarding credit should contact the Office of Enrollment Services, UNCC, Charlotte, NC 28223, (704) 547-2110.

College Level Examination Program (CLEP) General Examination. An undergraduate student may receive up to 32 semester hours of credit equivalent to the UNCC general degree requirements, with credit being awarded only for scores at the 50th percentile, or higher.

Subject Matter Examinations. Credit may be awarded for subject matter examinations listed below at the levels recommended in the current edition of *CLEP Scores: Interpretation and Use:*

Business
Computers and Data Processing
Introduction to Management
Introductory Accounting
Introductory Business Law
Introductory Marketing

Education
Educational Psychology
Human Growth and Development

Mathematics
Calculus w/Elementary Functions
College Algebra
College Algebra-Trigonometry
Trigonometry

Sciences
Biology
General Chemistry

Foreign Languages
College French I & II
College German I & II
College Spanish I & II

Humanities
American Literature
Anal. & Interp. of Literature
College Composition
English Literature
Freshman Literature

Social Studies
American Government
American History I & II
General Psychology
Intro. Macroeconomics
Intro. Microeconomics
Intro. Sociology
Western Civilization I & II

Credit is *not* awarded for examinations in dental hygiene and medical technology.

The amount of CLEP credit which is applicable to a specific degree program is determined by the department offering the program.

Transfer Credit from Other Institutions. Transcripts are evaluated in the Admissions Office and the results are provided to the applicant and to the major department/college. Determining the applicability of tranferred credits to major or program requirements is the responsibility of the department chairperson or program director. General rules governing transfer credit:

1. To be considered for transfer credit, the courses must have been undertaken at a *regionally* accredited institution.
2. *Provisional* transfer credit may be granted for study at foreign institutions or U.S. institutions which are not regionally accredited, but must be validated by 30 semester hours of successful performance in residence at UNCC.
3. Courses in which credit is accepted must be appropriate for approved University programs and curricula in which the student is enrolled.

Additional requirements for *undergraduate* transfer credit:

4. Any course from an accredited institution which transfers as a course on the General Education list carrying the "IR" (initiation date retroactive indefinitely) notation will satisfy the goals for which the UNCC course is applicable. All restrictions that apply to UNCC courses apply to transfer courses.
5. No credit below *C* level will be accepted; grade points and averages do *not* transfer.

Additional requirements for *graduate* transfer credit:

6. The grade in any course accepted for transfer credit must be the equivalent of that awarded for commendable *(A)* or satisfactory *(B)* work as defined by UNCC.
7. At the time of admission, up to six transfer hours credit may be accepted from another accredited institution upon approval of the student's adviser and the dean of his/her major college.
8. Courses accepted for transfer are subject to the same time limitation as courses taken in residence.

Credit for Military Training. The University will approve academic credit for military training equivalent to UNCC courses required for the students' major, minor or general education requirements and up to three hours of elective credit. The military training credit must be part of the student's first 30 hours at UNCC and must be approved by the student's major department chair, college dean and the department that offers the course. Documentation of the training, such as a certificate of completion or notation on the student's DD Form 214, is required. The same requirements apply to transfer or military training credit approved by another institution. Contact Enrollment Services for further information.

Correspondence and Extension Courses. A limited number of correspondence and/or extension courses may be transferred.

Courses from Two-Year Institutions. The University accepts a maximum of 64 hours from two-year institutions for undergraduate students.

Transient Study. Courses undertaken by UNCC students at other accredited institutions may be transferred to The University subject to the following regulations:

1. The University is not obligated to accept any credit from another institution unless the student has obtained the *prior approval* of the dean of the college in which he/she is enrolled. A Permit for Transient Study form should be completed and filed in the Registrar's Office.
2. No credit will be accepted below *C* level for undergraduate students or below *B* level for graduate students.
3. The student must request that an official transcript be mailed to the Registrar's Office upon completion of the course. A form for this purpose is available in the Registrar's Office.

Credit by Examination. A student currently enrolled at UNCC may pass a specially prepared challenge examination and receive credit for a University course without having to do the normal coursework. A department may allow a student to take examinations for courses not offered at UNCC, if it deems it appropriate to do so. No student may challenge a course for which either a passing or failing grade has been received at UNCC. (See page 56 for more information.)

APPLICATION FOR THE DEGREE

Each student should make application for his/her degree on a form obtained from the Registrar's Office no later than the filing date specified in the University calendar. The application must be accompanied by the appropriate filing fee in effect at the time of the application. Degrees are awarded at commencement exercises held at the end of the spring semester; however, the diploma and transcript will reflect the term in which all requirements were completed.

TEACHER CERTIFICATION

Students having completed degree requirements and filed application for their degree, who wish certification as public school teachers must request such certification from the State Department of Public Instruction on a form obtained from the College of Education and Allied Professions. For assistance, please call (704) 547-2539.

SECOND DEGREE AND/OR MAJOR

Second Baccalaureate Degree. Students who have earned bachelor's degrees from UNCC or other accredited institutions may enroll in a program leading to a second degree at the same level

provided (1) the major field selected is different from that of the first degree; (2) the degree sought is different from that of the first when that degree was granted by UNCC; and (3) the appropriate application for admission is filed and approved.

Students seeking a second baccalaureate degree must (1) complete a minimum of 24 semester hours beyond those applied to the first degree; (2) satisfy residency requirements if their first degree was not earned at UNCC; (3) achieve a minimum grade point average of 2.0 on all work attempted toward the second degree and (4) satisfy all department and college requirements for the degree sought. Students who hold a baccalaureate degree from an accredited institution will not be required to satisfy the UNCC General Education requirements for a second degree.

Second Baccalaureate Major. Students who have earned a bachelor's degree from UNCC or are working on a bachelor's degree at UNCC may enroll in a program leading to a second major under the same degree provided (1) the second major field selected is different from the first; (2) the student meets the requirements for acceptance into the second major program; and (3) the appropriate application or "Declaration of Program" is filed and approved.

MINORS

Students who have earned a bachelor's degree from UNCC or are working on a bachelor's degree at UNCC may enroll in a program leading to a minor (or minors) under that degree provided (1) the student meets the requirements for acceptance into the minor program, and (2) the appropriate "Declaration of Program" is filed and approved.

Academic Honors

CHANCELLOR'S LIST

The Chancellor's List is a record of all undergraduate students whose academic performance meets the specified criteria for special recognition from The University. In order to qualify for the Chancellor's List during the fall or spring semester, a full-time student must earn a grade point average of at least 3.8 in 12 or more semester hours of credit graded *A, B,* or *C* with no grade less than *C.* A part-time student must earn a combined fall and spring grade point average of at least 3.8 in 12 or more semester hours of credit graded *A, B,* or *C* with no grade less than *C.* To qualify for the Chancellor's List as a part-time student, a student must enroll on a part-time basis both fall and spring semesters. Students who receive the grade of *AU, H,* or *P* are not excluded from recognition as long as 12 hours are completed with *A, B,* or *C.* Students who receive the grade of *D, F, I, NR* or *N* are not eligible for recognition.

DEAN'S LIST

The Dean's List is a record of all undergraduate students whose academic performance meets the specified criteria for special recognition from The University. In order to qualify for the Dean's List, a student must earn a grade point average of at least 3.4 and not more than 3.79 and meet all other criteria as described for the Chancellor's List.

COMMENCEMENT MARSHALS

The juniors who have the highest scholastic averages among those enrolled full-time during the fall and spring semester are honored by being named commencement marshals. The marshal who has the best academic record is designated chief marshal. For the purpose of this selection, The University considers as juniors those students who have completed 89 hours of degree work at the end of the spring semester. Juniors who have not completed their last two semesters of work or their last 24 credit hours prior to the spring semester at The University of North Carolina at Charlotte shall not be considered as eligible to be marshals.

GRADUATION WITH DISTINCTION

Each of the undergraduate degrees is awarded Summa Cum Laude when the graduating student's grade point average is 4.0, Magna Cum Laude when his/her grade point average is at least 3.8 but less than 4.0, and Cum Laude when his/her grade point average is 3.4 or more but less than 3.8.

To be eligible to graduate with distinction, a student must complete in residency at UNCC at least 48 hours used in computing the grade point average.

Degree Requirements

BACCALAUREATE DEGREE REQUIREMENTS

The baccalaureate degrees require the completion of a minimum of 120 semester hours of credit, including all requirements for a major field of study. Specific requirements for degrees and programs are presented in the *Courses of Study* section of this *Catalog*.

Residence Requirements. The minimum residence requirement for a bachelor's degree at The University of North Carolina at Charlotte is that a student must earn the last 30 semester hours of credit at The University. The last 12 semester hours of work in his/her major field must be earned at The University. Exception to either of these hour provisions may be made upon the recommendation of the student's major department and with the approval of the dean of the college of the student's major.

At least six of the semester hours credit to be counted toward completion of requirements for a minor at UNCC must be earned at UNC Charlotte.

Coursework taken in residence shall be construed to mean work offered by The University of North Carolina at Charlotte and taken in courses on the Charlotte campus. Credit earned by challenge examinations cannot be used to meet the residence requirement.

Grade Point Requirements. In all courses attempted at The University, a minimum overall grade point average of 2.0 is required. In all courses in the major and in a minor, a minimum grade point average of 2.0 is required.

Course Level Requirement. Junior and senior students are required to have the consent of the major department to enroll in any course below the 3000 level not required in their degree program.

GENERAL EDUCATION REQUIREMENTS FOR ALL BACCALAUREATE DEGREES

The following common core of general education requirements is designed to develop skills, competencies and learning capacities to achieve the Goals of UNCC Education. These requirements apply to all candidates for baccalaureate degrees at The University. **Students admitted as freshmen prior to summer 1986, or as transfer students prior to summer 1988,** ***must meet these requirements or the appropriate course requirements for their degree as specified in the catalog in effect at the time of their first enrollment as a degree student.***

Requests for exceptions to any aspects of these requirements for individual students must be approved by the Vice Chancellor for Academic Affairs in consultation with the Council on General Education. Such exceptions may be requested by completing the Special Request Form, including approvals by the student's adviser, chairperson and dean, and submitting it to the Office of Academic Affairs.

GOALS OF UNCC EDUCATION

In keeping with the Goals of UNCC Education, all graduates should possess a general understanding of and appreciation for science and technology; literature and the arts; the individual, society and culture; and the interrelationships among these.

LIST OF APPROVED COURSES

The courses which satisfy the Goals of UNCC Education are identified in the course descriptions of each specific area of study in the undergraduate *Courses of Study* section which begins on page 68 of this *Catalog*.

In addition, the *Schedule of Courses,* published prior to each term, will contain an updated listing of courses that have been approved as satisfying specific goals. These courses will be designated by the following symbols:

A Arts and Ideas
C Individual, Society and Culture
L Literature or Ideas
P Problem Solving
S Science and Technology
V Values
W Writing Intensive
X Cross-Cultural/International Perspective

Note: An individual section of a course may be designated to meet a specific goal. Consult the *Schedule of Courses* prior to each term for a complete listing of courses and sections approved to satisfy each goal.

A student may select from approved courses offered in any semester in residence. A student may use a course to satisfy *only one Goal* even though the course qualifies to satisfy more than one Goal. The only *exceptions to this restriction* concern GOAL III (Values) and Writing Intensive (part GOAL I.) Courses approved to meet the Values or Writing Intensive requirements also can be used to satisfy another goal. However, a student may not use a course to satisfy more than two goals at the same time even if the course is approved to satisfy more than two goals.

GOAL I. COMMUNICATION

UNCC graduates should be able to:

A. Effectively send and receive in English written and oral messages in different situations for a variety of audiences, purposes and subjects.
B. Communicate effectively in a symbolic system of language (other than English) having written, oral or visual components.

Requirements/Approved Courses

- English 1101 and 1102 (or transferred equivalent courses, or proficiency through English 1102 level demonstrated by testing).
- Writing Intensive (W) courses: six semester hours, including three semester hours at the 3000 level or above and at least three semester hours outside the student's major. Approved courses include but are not limited to:

AAAS 2215, 3692
AERO 3101
ANTH 2121, 3601
BIOL 5144
CEGR 3151, 3251
CHEM 3695, 4695
CJUS 4200
CSCI 3688
DANC 3110
ECON 4177
EDUC 3152
EEGR 3151, 3152, 3251, 3252
(four labs satisfy one W goal)
Engineering Technology Majors:
(three labs satisfy one W goal)
CIET 3151, 3154, 3252, 3253, 3155
ELET 3153, 3156, 3255, 3256, 3257, 3258
INET 3151, 3251
MEET 3151, 3152, 3251, 3252
MFET 3251
ENGL 2014, 2015, 2116, 2126, 3110, 4204
ESCI 3124
GEOG 3215, 3265
HIST 3215, 3700, 4000, 4001, 4002
HONR (formerly ARSC) 3702
HUSV 2100
JOUR 2160
MATH 3141, 3163
MEGR 3153, 3154
(two labs satisfy one W goal)
MGMT (formerly BUSN) 3160, 3162
NURS 3110, 3220
POLS 3990
PSYC 2102
READ 3151, 5250
RELS 3101, 3204, 3205, 3600
SOCY 4656
SOWK 3183
SPAN 2009
THEA 2218, 2219
TRAN 3274
WMST 3101
Other courses designated W

Designated sections only of the following courses are approved to meet Goal I: Communication (W):

ANTH 1101
ARCH 3050B, 3144
ARTS 3001
BIOL 3215, 4144
CHEM 3090 (S '89)
ENGL 2108 (S '90 only), 3050S,
3050W (S '89 only)
FORL 3050 (European Cinema)
GEOG 3000
HIST 3241
HONR (formerly ARSC) 1702, 3700
PHIL 1105, 2101
POLS 1110, 1130, 1150, 3111 (S '90 only)
PSYC 2120
RELS 1101, 3000
SOCY 1101, 2090, 2171
WMST 3050B (F '88 only)

- Foreign language proficiency through the 1202 course level. Proficiency may be certified by one of the following means: (1) completion of any foreign language course at UNCC at the 1202 level or above; (2) transfer of an equivalent course from another college or university; (3) satisfactory performance on one of UNCC's Foreign Language Proficiency Exams; (4) satisfactory performance on a proficiency exam administered by another institution, subject to the approval of UNCC's Educational Support Services and/or Department of Foreign Languages; (5) presentation of an acceptable score on an approved test in foreign languages, such as AP or CLEP.

Note: All students with certified learning disabilities or with impaired sensory, manual or speaking skills who require special assistance regarding the foreign language requirement should contact the Office of Disabled Student Services. American Sign Language will be accepted to meet the foreign language requirement beginning with the Fall 1991 semester.

Note: Foreign language courses taken to meet university competency requirements may *not* be graded on a pass/no credit basis.

Students whose native language is not English may satisfy the foreign language requirement by completing ENGL 1102.

All questions regarding the foreign language requirement should be directed to the UNCC Department of Foreign Languages.

GOAL II. PROBLEM SOLVING

UNCC graduates should possess the analytical abilities necessary to:

A. Sense, discover and define problems.
B. Recognize and understand the use of qualitative and quantitative methods for solving problems and select those appropriate for specific problems.
C. Collect and order information.
D. See the relationships among phenomena.
E. Assess the probable implications of a solution.
F. Decide on an appropriate solution.
G. Evaluate the problem-solving process.

Requirements/Approved Courses. Problem solving is a goal of all courses taught in The University and it is integrated into all the other Goals of UNCC Education. Additional requirements:

•Analytical and quantitative approaches to problem solving (select one):

Six semester hours mathematics (including STAT/OPRS) **OR**
Three semester hours mathematics (including STAT/OPRS) and Logic PHIL 2105 (3) **OR**
Three semester hours mathematics (including STAT/OPRS) and Computer Science 1100 (3).

Students majoring in Engineering Technology may consult the Engineering Technology Department regarding this requirement. (The following courses fulfill this goal: EGET 3171, EGET 3172, EGET 3273.)

•Research methods and problem-solving coursework appropriate to the major discipline or field study. (This coursework is specified by the student's major department.)

GOAL III. UNDERSTANDING VALUES

UNCC graduates should confront the dynamics of personal and community interrelationships by:

A. Recognizing the assumptions, beliefs, and values underlying one's own conduct.
B. Recognizing the historical context and assessing the consistency of one's own values.
C. Recognizing differences in the assumptions, beliefs, and values underlying the conduct of others.
D. Recognizing the implications of decisions made on the basis of values.

Requirements/Approved Courses. Aspects of this goal are addressed by many courses throughout the curriculum and by extracurricular activities offered on and off campus. Specific academic requirements:

•Values (V) courses: three semester hours. Approved courses include but are not limited to:

AAAS 3101
ANTH 1101
CJUS 2102
ENGL 3110
ESCI 2101
GEOG 3265
HIST 1100, 2000, 2111
PHIL 3221, 3228, 3231
POLS 3070, 3101, 3115, 3137, 3171, 3173, 3175
RELS 1110, 2101, 2104, 2105, 3204, 3205
SOCY 1101, 2112, 2132
WMST 3101, 3201
Other courses designated V

Designated sections only of the following courses are approved to meet Goal III: Values (V):

HONR (formerly ARSC) 1701, 1702, 3700, 3701
POLS 3000
PSYC 2150
RELS 1101, 3000

(Some Values courses also are approved to satisfy other general education requirements.)

GOAL IV. UNDERSTANDING SCIENCE AND TECHNOLOGY

UNCC graduates should:

A. Be conversant with and have had experience in the aims , methods, and principles of scientific and technological endeavors.
B. Understand the nature and limitations of the world view given us by sciences.
C. Understand the effects of technology in shaping the physical and human environments.

Requirements/Approved Courses: (Laboratory science courses are indicated in the *Schedule of Courses* published for each semester and for the summer sessions.) Completion of *one* of the following options:

1. One science (S) course with laboratory from three of the following six groups:

   Biology—BIOL 1110 or 2111 (Prior to F '90)
   Chemistry—CHEM 1101 + 1101L or 1103 + 1103L
   Earth Science—ESCI 1101 or 1200 + 1200L
   Engineering Technology—ELET 3112 + ELET 3156
   Physics, Astronomy—PHYS 1101, 1130 + 1130L or PHYS 2221 + 2221L, PHYS 3000 (selected topics in Physical Sciences only)
   Psychology, Physical Anthropology—ANTH 2141 or PSYC 1101 + 1101L
   Other courses designated S

2. A two-semester sequence of Science (S) courses with laboratories from:

   BIOL 1110 and 1115
   BIOL 2111 and 2112 (Prior to F '90)
   CHEM 1101 + 1101L and 1102 + 1102L
   CHEM 1103 + 1103L and 1104 + 1104L
   ESCI 1200 + 1200L and 1210
   PHYS 1101 + 1101L and 1102 + 1102L
   PHYS 2221 + 2221L and 2231 + 2231L
   Other courses designated S

GOAL V. UNDERSTANDING THE ARTS, LITERATURE, AND IDEAS

UNCC graduates should:

A. Be conversant with, and have had experience in, the aims and methods of the great intellectual, spiritual, literary, and artistic expressions that have shaped the development of the human imagination.
B. Understand the importance that abstract ideas and artistic images have in the process of self-understanding and in the shaping of society.

Requirements/Approved Courses:

•Literature or Ideas (L) courses: three semester hours. Approved courses include but are not limited to:

AMST 3000, 3100
ENGL 2101, 2102, 2103, 2104, 2105, 2111, 2112, 3103, 3104
GERM 3050
HIST 2200, 3101, 3102, 3105, 3106
HONR (formerly ARSC) 1701, 1702, 3701 (sequence of three courses)
PHIL 2101
RELS 1101, 2101, 2102, 2104, 2105, 3101, 3218
SPAN 2009
WMST 3201
Other courses designated L

•Arts and Ideas (A) courses: three semester hours. Approved courses include but are not limited to:

AAAS 2206
ANTH 3020, 3112
ARCH 2111, 2112, 3111
ARTS 1101, 1102
DANC 2110, 2111
ENGL 2106
GERM 3030
HIST 3102, 3105, 3106, 3107
HONR (formerly ARSC) 2701
MUSC 1132
PHIL 3205, 3223, 3225
RELS 3163
THEA 1101, 2101, 2102
Other courses designated A

Designated sections only of the following courses are approved to meet Goal V: Arts and Ideas (A):

ARTS 3001
FORL 3050 (European Cinema)

GOAL VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY, AND CULTURE

UNCC graduates should be able to:

A. Understand how institutions operate with societies in both contemporary and historical perspectives.
B. Understand internal and external influences which promote and inhibit human action.
C. Understand the patterns of change which individuals experience at various points in life.
D. Recognize the complex, integrated, and dynamic nature of human behavior and human experience.
E. Understand the commonalities, differences, and interdependence among and within societies of the world.

Requirements/Approved Courses:

•Individual, Society and Culture (C) courses: six semester hours including at least three semester hours with a cross-cultural and/or international perspective (which are designated X). Approved courses include but are not limited to:

AAAS 2201
AMST 3100, 3210
CJUS 1100 (formerly 2100)
ECON 2101, 2102
EDUC 2100, 2150
ENGL 2101, 2102
GEOG 1105
GRNT 2100
HONR (formerly ARSC) 3702
HIST 1160, 1161, 2111, 2141, 3241
HUSV 1100
PHIL 3226
POLS 1110, 3177
PSYC 1101, 2120, 3116, 3124, 3130, 3135, 3151
RELS 2108
SOCY 1101, 2112, 2132
SPED 3160
WMST 4101
Other courses designated C

Designated sections only of the following courses are approved to meet Goal VI: Individual, Society and Culture (C):

AERO 3201
AMST 3000C (F '88 only), 3000P
HONR (formerly ARSC) 3700

•Cross-Cultural and/or International Emphasis (X) courses include but are not limited to:

AAAS 1100, 3101
ANTH 1101, 2114, 3020, 3112, 4010, 4110
ARCH 2111, 2112
ENGL 2111, 2112, 3146
GEOG 1101
HIST 1100 (formerly 1000), 1120, 1121, 2205
MKTG 3215
POLS 1130, 1150
RELS 2102, 3000R, 3163
Other courses designated X

Designated sections only of the following courses are approved to meet Goal VI: Cross Cultural and/or International Emphasis (X):

ARCH 3111
GEOG 3000
HONR (formerly ARSC) 1702
(only prior to S '90)

•Beginning Spring Semester 1988, students enrolled in a degree program at UNC Charlotte may satisfy up to six (6) semester hours of the Goal VI (X) (cross-cultural) requirement through participation in a study-abroad program sponsored, or specifically approved, by the Center for International Studies.

Upon a student's successful completion of an approved study abroad program, up to six (6) hours of the cross-cultural requirement will be awarded, based on the following guidelines:

Length of Study Abroad	*Cross-cultural Requirement Met*
8 weeks or longer	Up to six semester hours, based on semester hours earned through study abroad. (Examples: 3 hours earned = 3 hours of the requirement met; 9 hours earned = 6 hours of the requirement met)
Less than 8 weeks	Up to three semester hours, based on semester hours earned through study abroad (Examples: 2 hours earned = 2 hours of the requirement met; 4 hours earned = 3 hours of the requirement met)
	An additional three hours (to a total of six hours) may also be approved by COGE (on the advice of the Center for International Studies) to satisfy the requirement if the program experience and/or content warrant.

Courses of Study

Following are descriptions of courses and programs offered by The University of North Carolina at Charlotte. Courses and degree programs are listed by college and department or academic area. Special programs and information about preparation for professional schools are listed in a separate section titled *Special Programs.*

COURSE DESCRIPTIONS. Courses are listed with a subject prefix and course number, the title of the course, any of the Goals of UNC Charlotte Education that the course satisfies; semester hours credit earned, prerequisites or corequisites (if any), a description of the subject matter of the course, and an indication of the semester the course is usually offered *(Fall, Spring, Summer).* For example:

ENGL 1000. Title of Course. (Goals Met) (Credit Hours) Pre/corequisites. Description of course content. *(When offered).*

Additional information may be given in parenthesis following the course description: *(Evenings)* indicates courses that are offered in the evening at least once during the two years of this *Catalog; (Yearly)* indicates courses offered at least once a year; *(Alternate years)* indicates courses offered every other year; *(On demand)* indicates courses offered when there is sufficient demand.

The course description may specify the number of class (lecture) and/or laboratory sessions and hours. If no class hours are given, the number of class hours per week is the same as the number of semester hours credit for the course.

GOALS OF UNCC EDUCATION

The letters **(A)**, **(C)**, **(L)**, **(P)**, **(S)**, **(V)**, **(W)**, or **(X)** following a course description identify the specific Goals of UNCC Education that the course is approved to meet. **Note: in some cases only a designated section of a course will be approved to meet a goal. Consult the Schedule of Courses published prior to the beginning of each semester for a complete listing of courses approved.**

COURSE NUMBERING SYSTEM. Courses are identified by four-digit numbers. The first digit of the number generally identifies the level of the course; **1000-2999:** lower-division undergraduate; **3000-3999:** upper-division and undergraduate; **4000-4999:** upper-division undergraduate and graduate;

5000-5999: graduate and advanced undergraduate; **6000-7999:** graduate only; **8000-8999:** doctoral only. Additional work generally is required by graduate students in 4000-level courses. The following second digits designate special types of courses: 0 for topics, 4 for internships and practica, 5 for cooperative education, 6 for seminars, 7 for honors courses, 8 for independent study and 9 for research.

Course Selection. Each student is responsible for the proper completion of his/her academic program; the student is encouraged to consult with the assigned academic adviser or advisory committee in his/her major field. The adviser will help the student to select courses within an approved program of study which will enable him/her to progress logically and successfully to the conclusion of the chosen degree program and to fulfill the requirements of both The University and the major department or professional sequence. Students intending to teach should consult faculty advisers in both the major department and the College of Education and Allied Professions.

INTERDISCIPLINARY STUDIES. The University offers several interdisciplinary programs: American Studies, Communication Studies, Gerontology, Interdisciplinary Honors, International Studies, Museum Studies and Women's Studies. These programs are listed alphabetically within the College of Arts and Sciences in this *Catalog, except for Interdisciplinary Honors and International Studies,* which can be found under *Special Programs* and *Museum Studies* which can be found in the *Department of Sociology, Anthropology and Social Work.*

PLACEMENT EXAMINATIONS AND PROCEDURES. Placement examinations are given at the beginning of each semester to help students determine the appropriate course for them in Freshman English (if they are international students), foreign language and mathematics.

English Placement Procedures. All incoming freshmen and transfer international students who are not native speakers of English (exceptions are students who have Bachelor's degrees from institutions in English-speaking countries) **must** take the UNC Charlotte English Placement Test to determine if special English-language instruction is needed. Those international students whose Placement Test scores fall below a level deemed appropriate for success in English 1101 (English Composition) must register for English 1100 (English for International Students) *at the beginning of their first semester at UNCC.* Those international students attempting to transfer English 1101/1102 credit(s) from another university or college must either demonstrate a working proficiency in academic English on the UNCC Placement Test or show successful completion of English 1101 *at UNCC* before the English transfer credit(s) will be accepted by The University.

Foreign Language Placement Procedures. Freshmen and transfer students entering UNCC are required to pass or place out of the second college level course (e.g., French 1202) in a language they studied for at least two years in high school, or to pass the second college level course in a new language not studied for two years in high school. Proficiency exams are offered in French, German, Italian, Latin, and Spanish during the fall, spring and summer orientation sessions. Additional information may be obtained from the Department of Foreign Languages or Academic Assessment Services.

Mathematics Placement Procedures. Freshmen and transfer students entering UNCC must take a placement examination to determine the appropriate entry-level mathematics course.

College of Architecture

Dean: Professor Hight; *Chairperson for Instruction:* Associate Professor Morgan; *Professors:* Melaragno, Mitchell; *Professors Emeritus:* Anderson, Langhorst; *Associate Professors:* Benzing, Brentrup, Gallis, Heath, Lambla, Morgan, Nelson, Randle, Sauda, Vollendorf, Walters; *Assistant Professors:* Asbel, Debelius, Johnson, Ryan, Swanson Swisher, Weiss, Wong; *Visiting Assistant Professor:* Gray; *Lecturer:* Daniel; *Part-time Lecturers:* Aveleyra, Egan, Preiss; *Distinguished Visiting Architects:* Allen, Campbell, Eisenman, Gwathmey, Torre

Purpose. Our society's concern for environmental quality and realization that we live in a world of finite resources provides unprecedented opportunities for architects to engage in research and programming, as well as to plan and design our buildings, building complexes, cities and other elements of the built environment.

The College believes humane, economically sound and visually stimulating cities and buildings can only be obtained through sensitive, responsible and creative meshing of the physical, societal, psychological, ecological, technical and visual determinants of environmental planning and design.

Therefore, the College of Architecture seeks to cultivate a sense of inquiry within each student and develop the individual's techniques of problem identification and solving. As process and product are viewed as being equally important and interrelated, the COA believes students must possess verbal and visual communication skills for examining environmental issues, testing ideas and communicating with others, as well as becoming equally proficient at analysis and synthesis.

For students to receive individual attention, the student-faculty ratio is kept reasonably low, and the faculty is composed of persons with a broad range of knowledge, skills and philosophies. In addition to the full-time faculty, a number of local practitioners participate as part-time instructors and an extensive distinguished visiting lecture-design critic program has been established.

Located in the major, most rapidly growing metropolitan area of the Carolinas, the College is able to incorporate community assistance projects into the educational program. Also, students may observe major buildings under construction, evaluate recently completed building complexes and examine the urbanization phenomena.

Program. The program is organized into a four-year segment (Bachelor of Arts degree in Architecture), followed by a one-year segment (Bachelor of Architecture degree). The College also offers a 14-month Master of Science in Architecture program.

Bachelor of Arts in Architecture. This four-year program requires 134 hours including 40 hours of architectural studio, 41 hours of other architectural courses, and 53 hours of general and elective courses. It is structured into the Architectural Foundation Program (first and second years) and the Architectural Development Program (third and fourth years). The Foundation Program provides the information and skills required of all persons involved in the planning and design of the physical environment. The Development Program provides students with educational alternatives, i.e., they may select from a series of different studio/seminar and lecture/seminar experiences.

The intention is to provide an educational milieu so that graduates will possess the following knowledge, abilities and attitudes:

1. Identify environmental problems and their boundaries, including user's needs, values, priorities and resources.
2. Discriminate what is and what is not relevant, as well as learn to organize the collected information into a useful format.
3. Demonstrate capacity to abstract ideas and concepts, apply the gained knowledge to different situations, and generate design alternatives.
4. Develop visual simulation techniques in order to evaluate alternatives, predict consequences and communicate with others.
5. Understand humanistic (social, psychological, physical) needs and values, and their relationships with the built environment.
6. Creatively perform systematic and intuitive analysis and synthesis of design problems, including examining the what, where, why and how of a problem.

7. Understand the qualitative and basic quantitative characteristics of building systems and their relationship to space-movement organizations.
8. Establish a strong sense of self-discovery and expression, as well as an attitude of participating in establishing society's priorities.

Graduates of the B.A. in Architecture program are eligible for consideration into the fifth year program, or they may pursue graduate study in related fields such as planning, urban design and landscape architecture.

B.A. in Architecture Academic Standards: One grade of *D* in a studio is permissible. Any grade of *D* in a subsequent studio will require repeating the course. Any student receiving less than a grade of *C* when repeating a studio course will be expelled from the COA. To graduate, an overall grade point average of 2.0 must be achieved in all courses offered by the College.

Bachelor of Architecture. Admission requires an architectural or environmental related degree and acceptance into the College. The program requires 30 semester credit hours, including 14 hours of architectural studio, 10 hours of other architectural courses and six hours of general studies. No transfer credit is accepted for this program.

The College seeks its Bachelor of Architecture graduates to possess the following attributes:

1. Greater understanding, knowledge and skills.
2. Ability to investigate and understand selected architectural issues.
3. General understanding of architectural practice, including its present and projected developments.
4. Possession of an in-depth understanding of a particular architectural subject through elective course study, and its integration with the studio experience which emphasizes self-direction.

Bachelor of Architecture Academic Standards: A grade of *C* is the minimum passing grade in studio. Any student receiving less than a grade of *C* when repeating a studio course will be expelled from the COA. An overall grade point average of 2.5 must be achieved in all the Bachelor of Architecture courses offered by the College in order to graduate.

So that students receive a general and comprehensive architectural education, the following discrete, but related teaching-learning experiences are provided:

The Architectural Studio/Seminar: Providing both analytical and synthetic experiences and the opportunity to pursue intense study of physical-environmental related subject(s), these courses link the humanistic, physical phenomena, social-psychological, behavioral and perceptional studies.

The Architectural Technology Courses: These provide a basic quantitative and qualitative behavioral understanding of structural and environmental control systems.

The Architectural Lecture/Seminar Electives: Through these courses students will be able to develop a comprehensive understanding of an architectural subject(s).

The Architectural History Lectures: Their purpose is to develop an understanding of the relationships between culture and their physical manifestations.

Independent Studies: When appropriate, a student may pursue a self-directed, faculty-approved study of a particular and significant architectural topic or subject.

General University Requirements and Directed Electives: Selection of courses to meet The University's general education requirements and elective studies occur in accordance with a student-selected, faculty-approved plan of study.

The Faculty Advisory Program: Major emphasis is given to a system of faculty advising so that there occurs an orchestration of architectural courses with general required and elective courses in accordance with a student's educational objectives.

Dual Degree/Major Option: It is possible for students to pursue a double degree or major program after the freshman year. Thus, in addition to architecture, a student may pursue a major study in a selected discipline such as history, engineering, business management, social sciences, etc. Any arrangement must meet the University's and College's requirements, as well as be structured in consultation with a faculty adviser and approved by the Dean.

Study Abroad Program: Arrangements have been made for students to study architecture for one or two semesters with the University of Copenhagen, Denmark, Kingston Polytechnic, London, and St. Andrews, Scotland. The College also conducts summer programs in Italy and Spain.

THE FOUNDATION PROGRAM

First Year

ARCH 1105	5	ARCH 1106	5
ARCH 1601	2	ARCH 1602	2
MATH 1103 (GOAL II)	3	MATH (GOAL II)	3
ENGL 1101 (GOAL I)	3	ENGL 1102 (GOAL I)	3
PHYS 1101 (GOAL IV)	4	Directed Electives (GOAL III)	3*

Second Year

ARCH 2105	5	ARCH 2106	5
ARCH 2601	2	ARCH 2602	2
ARCH 2111	3	ARCH 2112	3
General Electives	7*	General Electives	6*

THE ARCHITECTURAL DEVELOPMENT PROGRAM

Third Year

ARCH 3101	5	ARCH 3102/3104	5
ARCH 3141	3	ARCH 3142	3
ARCH 3111	3	ARCH Elective (3050 Series)	3*
ARCH Elective (3050 Series)	3	General Electives	6*
General Electives	3*		

Fourth Year

ARCH 3103	5	ARCH 3104/3102	5
ARCH 3143	3	ARCH 3144	3
ARCH Elective	3*	ARCH Elective	3*
General Electives	6*	General Electives	6*

Bachelor of Arts in Architecture: 134 hours

ARCHITECTURAL ADVANCED PROGRAM

ARCH 5101	7	ARCH 5102	7
ARCH 5111	2	ARCH 5112	2
ARCH 5615	3	ARCH 5616	3
General Elective	3*	PHIL 3225	3

Bachelor of Architecture: 30 hours

**Courses to be selected in accordance with program of study developed with and approved by faculty adviser.*

ARCHITECTURE (ARCH) COURSE DESCRIPTIONS (BACHELOR OF ARTS)

Studio Courses

ARCH 1105. Comprehensive Studio. (5) 11 contact hours. Prerequisite: major in Architecture. Laboratory/Studios dealing with visual ordering systems, environmental design issues and creative problem identification/solving process, as well as development of visual and verbal communication skills. *(Fall)*

ARCH 1106. Comprehensive Studio. (5) 11 contact hours. Prerequisite: ARCH 1105 and ARCH 1601. Laboratory/Studios concentrating on development of the vocabulary of form. Drawing, modeling, experimenting, and experiencing the conceptual development of shape, color, surface, space, volume, and the programmatic reasoning that is manifest in each. Advanced visual communication skills are emphasized. *(Spring)*

ARCH 1601. Architectural Seminar. (2) 2 contact hours. Corequisite: ARCH 1105. This course represents the first half of a series of lectures alternating between topics of architectural craft and architectural ideology. Conceptions of form, space and order, principles of spatial definition, and methods of representation are presented along with a range of theoretical positions concerning how architecture incorporates ideas. *(Fall)*

ARCH 1602. Architectural Seminar. (2) 2 contact hours. Corequisite: ARCH 1106. Prerequisite: ARCH 1105, and ARCH 1601. This course continues the format of ARCH 1601 and the lectures concerning architectural craft centering on topics of building elements, spatial sequence, scale and proportion, color and light, and the implications and potency of construction materials. *(Spring)*

ARCH 2105. Comprehensive Studio. (5) 11 contact hours. Prerequisites: ARCH 1106 and ARCH 1602. Laboratory/Studios emphasizing the significant purposes for building; understanding the theoretical, technical and symbolic consideration of the environment relative to intervention, and intentions from behavioral information toward a comprehensive design process. *(Fall)*

ARCH 2106. Comprehensive Studio. (5) 11 contact hours. Prerequisites: ARCH 2105 and ARCH 2601. Laboratory/Studios concentrating on the development, experimentation and understanding of the range, potential, materials, systems, and methods in the use of architectural technologies. *(Spring)*

ARCH 2601. Architectural Seminar. (2) 2 contact hours. Prerequisites: ARCH 1602, 1106. Corequisite: ARCH 2105. This seminar introduces models of design process to build judgemental capacity in the areas of function, spatial organization, culture, and landscape. Site planning is presented both as a technical demand and a formal device. Lectures, demonstrations and design workshops are used to build skill. *(Fall)*

ARCH 2602. Architectural Seminar. (2) 2 contact hours. Prerequisite: ARCH 2601, 2105. Corequisite: ARCH 2106. This seminar introduces both theoretical and practical background information in the areas of form, material and use. Each area is explored through readings, lectures, design workshops and field trips. *(Spring)*

ARCH 3101. Architectural Studio. (5) 9 contact hours. Prerequisites: major in Architecture, ARCH 2102. Series of studio sections offered with different emphasis and subject concentration so students may receive a variety of studio experiences or pursue an area of study. Student may take one instructor for no more than two of the four studios. Section emphasis announced by time of academic registration. *(Fall)*

ARCH 3102. Architectural Studio. (5) 9 contact hours. Prerequisites: major in Architecture, ARCH 3101. *(Spring)*

ARCH 3103. Architectural Studio. (5) 9 contact hours. Prerequisites: major in Architecture, ARCH 3102. *(Fall)*

ARCH 3104. Architectural Studio. (5) 9 contact hours. Prerequisites: major in Architecture, ARCH 3103. *(Spring)*

Architectural History Courses

ARCH 2111. Ancient Architecture. (A, X) (3) 3 contact hours. Study of ancient architecture and communities with emphasis upon the built environment as a cultural, political, religious, economical and visual expression. *(Fall)*

ARCH 2112. Medieval/Renaissance Architecture. (A, X) (3) 3 contact hours. Prerequisite: ARCH 2111. Medieval and renaissance architecture and communities; emphasis on the built environment as a cultural, economical, political, religious and visual expression. *(Spring)*

ARCH 3111. Eighteenth to Twentieth-Century Architecture. (A) (3) 3 contact hours. Prerequisite: ARCH 2112. Study of theoretical, technical and cultural background of architecture and planning from the middle of the 18th century through the mid-20th century. Emphasis upon development of ideas as they relate to architectural theories of the 20th century. *(Fall)*

Building Systems Courses

ARCH 3141. Building Systems One. (3) 3 contact hours. Prerequisites: All math and science requirements. Basic quantitative study of structural and material behavior, as well as continued study of qualitative behavior initiated in the Foundation Program studios. *(Fall)*

ARCH 3142. Building Systems Two. (3) 3 contact hours. Prerequisite: ARCH 3141. Continuation of ARCH 3141. *(Spring)*

ARCH 3143. Building Systems Three. (3) 3 contact hours. Prerequisite: PHYS 1101. Basic quantitative studies of HVAC, electrical, plumbing and lighting systems, as well as continued qualitative studies initiated in the Foundation Program studios and relationship of these systems with structural alternatives. May be taken along with ARCH 3141. *(Fall)*

ARCH 3144. Building Systems Four. (3) 3 contact hours. Prerequisite: ARCH 3141. Continuation of ARCH 3143. *(Spring)*

General Architectural Courses

ARCH 3050. Architectural Elective Studios. (3) Contact hours to depend upon the nature of the course. Prerequisite: ARCH 2102. Series of lecture/seminar/laboratory courses which include concentrated, in-depth study of selected environmental design/planning subjects. Specific subjects to be announced by time of academic registration. *(Fall, Spring)*

ARCH 3160. Design Process. (3) Prerequisite: ARCH 2101 (for architecture majors or consent of instructor.) Design skills required by architects and other professionals in utilizing varying models of design, design judgment/evaluation, design synthesis and inquiry through design. Sources and uses of design information which may lead to a better fit between psychological demand and the built form. *(Fall)*

ARCH 3162. Passive Environmental Control Systems. (3) Prerequisite: ARCH 2101 or consent of the instructor. Design procedures for passive environmental technologies and their interrelationsip with the building design process. *(Fall)*

ARCH 3163. Lighting and Acoustics. (3) Prerequisite: ARCH 2102 or consent of the instructor. Integration of electrical lighting with building form and natural lighting including human perceptual needs, color, electrical light sources, computational methods, graphic analysis, illuminated models, and effects of lighting on thermal comfort and energy use, sky conditions, building, openings, materials and form, computational methods, and illuminated models. Study of sound behavior, relationships between sound and building form, materials and structures, and spatial use including principles of sound and hearing, analysis of sound absorption and transmission, ASTM standard test methods, acoustical privacy in open plans, design for good hearing in rooms, and mechanical system noise and vibration control. *(Fall)*

ARCH 3164. Computer Applications in Architecture. (3) Prerequisite: ARCH 2102 or consent of the instructor. Introduction to computers and their impact on the architectural profession. Emphasis on graphics application programs (pre-packaged) and their use in visualizing architecture. Introduction to BASIC programming language. *(Fall, Spring)*

ARCH 3168. Design Graphics. (3) Prerequisite: Third-year standing for architecture majors or consent of the instructor. Expansion of design capabilities through graphic technique exploration, improvement of drawings and communication skill development. *(Spring)*

ARCH 3890. Directed Independent Study. (1-3) Prerequisite: major in Architecture. This course is designed to allow students to pursue faculty-directed independent study topics not provided by other College offerings. May be repeated for credit with the approval of the College. May not be taken in conjunction with ARCH 5101 and ARCH 5102 without permission from Chair of Instruction. *(Fall, Spring)*

BACHELOR OF ARCHITECTURE

ARCH 5101. Comprehensive Studio. (7) 15 contact hours. A faculty-directed studio of primarily short-term exercises in sketch mode, resulting in group reviews and related seminars. In addition to the primary issue of creative architectural design, exercises will also address environmental analysis and problem formulation. Final weeks devoted to definitive development of a student-selected design from among the foregoing exercises. *(Fall)*

ARCH 5102. Thesis Studio. (7) 15 contact hours. Prerequisites: ARCH 5101, 5111 and 5615 with grades of *C* or better. Corequisites: ARCH 5112 and 5616. Execution of thesis project proposed by the student and accepted by the faculty for ARCH 5111. *(Spring)*

ARCH 5111. Thesis Proposal. (2) 2 contact hours. Corequisite: ARCH 5615. A proposal to initiate a thesis project, approval of which is required for admission to ARCH 5102. A Thesis Advisory Committee of three, consisting of one COA undergraduate faculty, one fifth-year faculty, and one from outside, will advise the student in both preparation of the thesis proposal (ARCH 5111) and the thesis (ARCH 5102). *(Fall)*

ARCH 5112. Architectural Practice. (2) 2 contact hours. Corequisites: ARCH 5102 and 5616. Learning objectives include an understanding of the practice of architecture today, its responsibilities and procedures, and emerging alternative forms of practice and roles of the architect. *(Spring)*

ARCH 5615. Architectural Seminar. (3) 3 contact hours. Corequisites: ARCH 5101 and 5111. Understanding the whole decision-making realm of which architecture is but a part and how creative decisions are made. Integrated with studio exercise application, seminars will address, at all issue levels, the establishment of priorities for design and evaluation. A working and theoretical understanding of the interface of the designer's personal attitudes and the context of a specific project in establishing priorities is a major learning objective. *(Fall)*

ARCH 5616. Architectural Seminar. (3) 3 contact hours. Corequisites: ARCH 5102 and 5112. This seminar serves the needs of ARCH 5102 in design response to the issues addressed in ARCH 5111 and ARCH 5615, and has the following learning objectives: (1) understand the purpose, creation and maintenance of laws governing buildings; (2) refine skills in public presentation and discussion; (3) refine the ability to perceive the issues inherent in the work of others and to respond with meaningful criticism; and (4) deepen the understanding of the systems of building. *(Spring)*

College of Arts and Sciences

Dean: Professor Lyons; *Associate Dean:* Professor Perzel; *Assistant Dean:* Professor McGavran

Objectives. The College of Arts and Sciences, largest of the University's six colleges, consists of 17 departments and three programs which share basic educational values and academic aspirations. The primary mission of the college is threefold: 1) the provision of programs of study and instruction in the arts and sciences to qualified undergraduate and graduate students; 2) the advancement of the arts and sciences through the scholarly activity of the faculty; and 3) the provision of service both to The University and to the general public.

The faculty in the College strongly endorse the proposition that the liberal arts are the core of the University's educational program, not only for students majoring in Arts and Sciences but also for students majoring in professional degree programs. As a result, courses offered within the College of Arts and Sciences are frequently those designated as meeting the university education requirements (see pages 63-67, Goals of UNC Charlotte Education).

Organization. The College of Arts and Sciences comprises the Departments of Afro-American and African Studies, Biology, Chemistry, Criminal Justice, Dance and Theatre, English, Foreign Languages, Geography and Earth Sciences, History, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Religious Studies, Sociology, Anthropology and Social Work, and Visual Arts. The interdisciplinary programs of American Studies, Communications Studies, Gerontology, and Women's Studies are also housed in the College.

Programs. Baccalaureate degrees are offered in all departments, and minors are available in the following programs: Afro-American and African Studies, American Studies, Anthropology, Biology, Communication Studies, Criminal Justice, Dance, Earth Sciences, English, French, Geography, German, Gerontology, History, Journalism, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Religious Studies, Social Work, Sociology, Spanish, Theatre and Women's Studies. Medical technology options are available in Biology and Chemistry. An emphasis is available in American Studies, which can also serve as a second major for teacher education students. Other second majors or concentrations for Education majors include Anthropology, English, Foreign Languages, Geography, History, Philosophy, Physics, Political Science, and Sociology. For Special Education students, there is also a program in Psychology.

The following graduate degrees are offered by the College of Arts and Sciences: Master of Arts degree with majors in Biology, English, Geography, History, Mathematics, Mathematics Education, Psychology, and Sociology; Master of Science degree with majors in Biology, Chemistry and Criminal Justice; and Master of Public Administration.

Although faculty within the College are committed to strong departmentally-based programs, increased emphasis is being placed on providing strong interdisciplinary programs. The College also strives to promote intercultural understanding through its curriculum, travel opportunities, student exchanges, and use of outside speakers.

Advising Center. The College of Arts and Sciences administers an advising center, staffed with full-time academic advisers, for students who have not selected a major when admitted to the University. This includes students who have not yet determined their career goals as well as those students who do not meet requirements for admission into other colleges within The University. All students, regardless of college or major, are encouraged to consult these advisers for clarification of academic regulations.

Since all students entering The University must meet the same general education requirements regardless of major, it is appropriate to concentrate on the completion of those requirements before committing to a specific major. Undecided students have time to try courses in several disciplines, which allows them to make a more informed judgment about future career decisions. Advisers come from many disciplines, have a broad working experience with the requirements for majors, and offer assistance and support as these students search for the education best suited to their individual needs.

Service-Learning Internships. Students may participate in internship experiences designed specifically to serve the needs of the community while providing learning opportunities for students.

The *Internship Program in Community Education and Services* is designed as an area-wide program with academic credit.

Interns may receive from one to 15 semester hours credit, with grading on a Pass/No Credit basis, for successful completion of ARSC 3400 (Non-Residential Studies). For additional information about this opportunity, contact the Office of Experiential Learning.

ARTS AND SCIENCES (ARSC) COURSE DESCRIPTIONS

ARSC 1000. Freshman Seminar. (3) Designed to assist with the intellectual and social transition from high school to college by developing positive attitudes toward learning and increasing the involvement of students in the intellectual life of the campus; providing an orientation to resources available to students; and promoting problem solving and writing skills. Each section will be developed around a content theme, usually selected from the instructor's discipline. *(Fall, Spring)*

ARSC 3000. Topics in Arts and Sciences. (3) Prerequisites: junior standing and consent of the sponsoring departments. Topics chosen from the general area of the arts and sciences in order to demonstrate relationships and interdisciplinary influences. May be repeated for credit as topics vary with consent of the student's major department. Can be used toward general degree requirements as indicated each time the course is offered. *(On demand)*

ARSC 3400. Non-Residential Studies. (1-15) Experience outside The University arranged cooperatively by the student and the major department for the purpose of applying, extending, adding to, or elaborating the student's studies in the major; or the service learning summer internship program. All arrangements for a non-residential study must be approved in advance. Arrangements include a written proposal of goals, methods, duration, hours credit, and evaluation procedures. Student projects in the department-based-non-residential studies will be developed, approved, supervised, and evaluated by the student's major department (in cooperation with others, if appropriate). The service learning summer internship program will be supervised by faculty appointed by the Director of Experiential Learning. Grading may be on a *Pass/No Credit* basis. Ordinarily to be taken no earlier than the junior year. No more than 15 hours of Non-Residential Studies may be presented toward a degree. (Cannot be used toward general degree requirements.) *(On demand)*

Department of Afro-American and African Studies

Chairperson and Frank Porter Graham Professor: Professor Azevedo; *Assistant Professors:* Dwight, Ojaide; *Lecturers:* Davis, Elliott

The Afro-American and African Studies program addresses itself to the experience of peoples of African descent on the continent of Africa and in the diaspora, particularly in the United States. It provides a coherent focus on the history, economy, politics, literature, religion and culture of black people throughout the world and their interaction with the rest of humankind. Its interdisciplinary approach, drawing from the experience of faculty trained in the areas of African-American and African Studies, presents a stimulating diversity of perspectives integrated into a totality not available in other disciplines, programs or departments. The curriculum is designed to provide a useful educational experience and academic skills for students who wish to consider graduate study or professional school and pursue careers in community development agencies; federal, state and city civil service; business; museums and archives; and diplomatic or foreign service; as well as research, journalism, international organizations and teaching.

The goals of the Department of Afro-American and African Studies are:

1. To provide and preserve knowledge with purpose and direction about the aggregate experience of peoples of African descent by offering a Bachelor of Arts degree in Afro-American and African Studies and courses in the field to the University community and the public at large.
2. To foster intercultural understanding, expose and correct biased scholarship, and dispel myths and stereotypes through course content, programs, exchanges and cultural interaction.
3. To provide a cultural background (through courses, advising and other meaningful activities) supportive to students, particularly African-American students, in moving toward personal growth and self-awareness.
4. To provide general and specific academic skills to majors and non-majors through courses and activities that promote research, writing, reading and effective communication.

5. To promote an African-American and African perspective that will foster a political consciousness about the common bond uniting blacks in the diaspora and the African continent.

6. To prepare and assist students for career choices in life and graduate and professional schools through exposure to relevant experiences, courses and the demands of the working world.

7. To establish and maintain the Department's interdisciplinary and intercultural nature through cooperative arrangements with other academic departments and civic and cultural institutions.

8. To generate new knowledge and paradigms about the African-American and African experience through research and publication and constant communication with similar programs.

9. To promote faculty development by providing required financial means, time, resources and proper environment to accomplish this end.

Study Abroad. Students may have an opportunity to travel, work and study abroad in an exchange program through an African university, the Peace Corps and Operation Crossroads.

BACHELOR OF ARTS

Students interested in the Afro-American and African Studies major leading to a B.A. degree are required to complete a minimum of 30 credit hours in the area of Afro-American and African Studies, including AAAS 1100, 1102, 1103, 1104, 2203, 2204, 2205, 3290, 3601 and 3990. Students are strongly encouraged also to take AAAS 2201 and 2206. In order to acquire experiences to enhance their career choices, students majoring in Afro-American and African Studies are recommended to pursue a double major in related areas such as history, political science, sociology, religious studies, anthropology and psychology. Furthermore, students have the option to concentrate either in the African-American or the African dimension of the program.

The required junior research methods and senior seminar courses introduce students to research methodology and an in-depth probe into the themes and theories of Afro-American and African Studies. During the senior year, with the instructor's assistance, students design and work on a major project known as Project Demonstrating Excellence (PDE). Using library, archival or community resources, students demonstrate practical mastery and synthesis of the skills and knowledge acquired through the major courses of study.

Senior projects may require student involvement in community agencies such as the Afro-American Cultural Center, the Greenville Center, the Mechanics and Farmers Bank, the Metrolina Association for the Blind, Planned Parenthood, and the *Charlotte Post*.

Minor

A minor in Afro-American and African Studies consists of a minimum of 18 semester hours: six hours each at the 1000 level, the 2000 level and the 3000 or above level. Required courses are AAAS 1110, a 2000 level course in the African diaspora component and a course in the continental component of the department's program. A minimum GPA of 2.0 in the hours attempted for the minor is required. AAAS 3895 shall not count towards the minor.

SUGGESTED SCHEDULE

Freshman Year

AAAS 1100 (X) 3	AAAS 1102 3
AAAS 1103 3	AAAS 1104 3
ENGL 1101 3	ENGL 1102 3
Foreign Language Proficiency 4	Foreign Language Proficiency 4
Mathematics 3	MATH 1100 or 1101 or CSCI 1100 or PHIL 2105 3

Sophomore Year

AAAS 2201 (C) 3	AAAS 2204 3
AAAS 2203 3	AAAS 2206 (A) 3
AAAS 2205 3	Related Work 3
GOAL IV 4	GOAL IV 4
GOAL I: (W) course outside major 3	Elective 3

Junior Year

AAAS 3290 3	Arts and Sciences Non-Residential Studies 12-16
GOAL V: (L) 3	
Other GOALS as needed 3	
Electives 6	

Senior Year

AAAS 3601 3	AAAS 3990 3
Electives 9	Other GOALS as needed 3
GOAL V: (A) 3	Electives 6

AFRO-AMERICAN AND AFRICAN STUDIES (AAAS) COURSE DESCRIPTIONS

AAAS 1100. Introduction to Afro-American and African Studies. (X) (3) A multicultural focus on contemporary societies that include black people and the methodology, key issues and themes in Afro-American and African Studies. Readings on the experiences of black people in their interaction with other cultures in Africa, America and Europe. *(Fall, Spring)*

AAAS 1101. The Black Experience I. (3) Personal development of Black awareness; opportunities for exploration of self-definition; and development of interpersonal relationship skills. Effective community dialogue and action; creation and facilitation of community involvement experience required. *(Fall, Spring)*

AAAS 1102. The Black Experience II. (3) Prerequisite: AAAS 1100. Further personal development of Black awareness; student orientation to experience involving Black perspective; Afro-American experience as topic for study and examination. Community involvement experience required. *(Fall, Spring)*

AAAS 1103. The African Experience I. (3) Introductory survey of the history and culture of African peoples within the context of pre-colonial, colonial, and independent Africa. Focus on unique social, political, economic processes and problems in Africa. In-depth study of outstanding African leaders as representatives of their societies. *(Fall)*

AAAS 1104. The African Experience II. (3) Exploration of contemporary issues in Africa and their impact on Afro-Americans and other Africans in the diaspora. Impact of European colonization on Africa, including topics such as racism, imperialism, revolutionary and reform-oriented political movements, nationalism, urbanization, and Pan-Africanism. *(Spring)*

AAAS 2105. Black Images in the Media. (3) Examination of Afro-American images projected through electronic and print media, historically and currently. *(Yearly)*

AAAS 2106. Literary Analysis of Black Protest of the 1960's (3) Selected Afro-American literary works examined as outgrowths of the 1960's protest movement. Poetry, drama and nonfiction of period studied. *(Spring)*

AAAS 2201. Introduction to Human Relations. (C) (3) Prerequisite: AAAS 1100. Understanding of self and others in a pluralistic society; analysis of theories of personal growth and interaction within the context of differing multi-ethnic values, mores and contributions. *(Fall, Spring)*

AAAS 2203. Afro-American Culture I. (3) Focus on the aesthetic dimensions of Afro-American culture through examination of aspects of literature, music, drama, art and dance. *(Fall)*

AAAS 2204. Afro-American Culture II. (3) Study of Black culture as manifested in social, political, economic and religious institutions through directed field work, lectures and research. *(Spring)*

AAAS 2205. African Culture I. (3) Survey of lifestyles in Africa with emphasis on the patterns of social behavior and communal organization that link and relate to the Afro-American experience and heritage. Research required. *(Fall)*

AAAS 2206. African Literature, Music and Art. (A) (3) Survey of African cultures through literature, music, drama, oral history and art with emphasis on the cultural undertones that link and relate the Afro-American experience and heritage. Creative research or community projects required. *(Spring)*

AAAS 2207. Introduction to Pan-Africanism. (3) Interdisciplinary study of Pan-Africanism. Examination of historical and contemporary efforts of peoples of African descent to unite their struggles for human advancement and equality in the United States, Latin America, Western Europe, and Africa, including critical review of popular movements, leading proponents and significant organizational manifestations of Pan-Africanism. *(Alternate years)*

AAAS 2208. Education and African Americans. (3) Examination of the problems and challenges of educating African Americans. Topics include: conceptual approaches to education; historical and contemporary overview of education for African-Americans; the impact of race and discrimination; analysis of existing curricula; and suggested models for a multi-racial and multi-cultural education. *(Fall)*

AAAS 2215. Black Families in the United States. (W) (3) Critical and comprehensive examination of the life of African-American families in the United States including the historical evolution of black families and their relationship with the political-economic structures of American society. *(Yearly)*

AAAS 2221. Introduction to Contemporary Africa. (3) Study of Africa from 1960 to the present. Focus on political, economic, and social changes and Africa's integration into the community of nations. *(Fall)*

AAAS 3050. Topics in Afro-American and African Studies. (3) Treatment of a special topic. May be repeated for additional credit as topics vary, with approval of the Chairperson. *(Fall, Spring)*

AAAS 3101. Values in Racial Perspectives. (VX) (3) Study of values and make-up of American pluralistic society in historical and contemporary context. Focus on understanding of African-American values vis-a-vis those of majority society. *(Spring)*

AAAS 3150. Black Church/Civil Rights Movement. (3) Role of the black church in the struggle for human equality. Topics include radical, moderate, and accomodationist leadership styles; historical development of the black church in the South and its emergence as a foundation for the modern civil rights movement. (Same as RELS 3150) *(Fall)*

AAAS 3190. The Political Economy of the Caribbean. (3) An examination of the structural and actual manifestations of Caribbean economic problems and policies and Caribbean political development from the post-war period to the present. *(Fall)*

AAAS 3230. Poverty and Discrimination. (3) Analysis of economic roots of poverty and discrimination and impact of anti-poverty and anti-discrimination laws on Black America. *(Spring)*

AAAS 3250. Political Economy of Black America. (3) Examines the problems and the issues influencing the development of the black economic base in the United States and its role in the American economy. *(Fall)*

AAAS 3265. African Economic Development. (3) Prerequisite: Previous course on Africa. Focus on economic theories, planning, production, and resource allocation strategies, capital formation, foreign aid and multinational corporations in Africa. *(Yearly)*

AAAS 3290. Research Methods. (3) Prerequisite: completion of sophomore-year courses or instructor's permission. Design of a research project with emphasis on developing sound research skills and methods. *(Fall, Spring)*

AAAS 3601. Senior Seminar. (3) Prerequisite: completion of junior-year courses. Corequisite: AAAS 3990. Reading, discussion, reports. Peer critique of conceptualization, methodology and research of Senior Project. May be repeated for credit with consent of Advisory Committee. *(Fall, Spring)*

AAAS 3692. Colloquium. (W) (3) Prerequisite: consent of the instructor. A weekly colloquium; research and writing; opportunity for intellectual stimulation, critique and problem solving. Open to majors and non-majors. *(Fall, Spring)*

AAAS 3895. Independent Study. (1-3) Prerequisite: consent of the Department. Supervised investigation of a problem or subject in the area of Afro-American and African Studies. Majors only. May be repeated for credit. *(Fall, Spring)*

AAAS 3990. Senior Project. (2-15) Prerequisite: completion of junior-year courses. Corequisite: AAAS 3601. The writing of a senior research paper or work on a community-related project. Emphasis on mastery of skills and content of the discipline. (May be repeated twice for credit with instructor's consent.) *(Fall, Spring)*

American Studies

INTERDISCIPLINARY STUDIES

Coordinator: Associate Professor Haber

American Studies is an interdisciplinary program designed to develop in-depth knowledge of American society, past and present. Drawing its curriculum from approved classes in other departments and its own core courses, the program weaves traditionally divergent disciplines together so that students gain a broad understanding of American life and culture. The American Studies program is open to students of all majors. Students may complete the program by fulfilling requirements for the emphasis or the minor.

EMPHASIS IN AMERICAN STUDIES

Students selecting the emphasis must complete 27 semester hours consisting of 9 hours of American Studies courses of which at least three hours must be in AMST 3100; three hours from the list of American-content multicultural courses; and 12 hours from American Studies or American-content courses from one of five approved areas: The South; Early America (to 1865); Modern America (1865-1965); Contemporary American Culture; or Multi-Cultural America. Students may select a maximum of six of these hours from one discipline. If students select the multicultural area as their specialty, they must select three hours from one of the other four areas. Students may find that some courses meet the requirements for both their major and the emphasis; however, a maximum of 9 hours of approved American-content courses from their major may be counted as part of the emphasis. All students must meet with the Coordinator prior to their senior year to outline the direction of their program. They also must have a grade point average of at least 2.0 in classes applied toward the emphasis.

AMERICAN STUDIES MINOR

A minor in American Studies consists of 18 semester hours: six hours of American Studies courses including AMST 3100, and 12 semester hours of American Studies courses or approved American-content courses from other departments. A maximum of six of these hours may be in the student's major. All students must have a grade point average of at least 2.0 in courses applied to the minor.

COURSES APPROVED FOR THE EMPHASIS AND MINOR

The following courses have been approved for the American Studies emphasis and minor. Because additions and deletions are made to correspond to current University offerings, students are advised to consult with the Coordinator. Other classes that do not appear on the list, especially topics and independent study courses, may be approved if they are pertinent to the student's program and deal with an American topic.

English: 2104, 3141, 3142, 3143, 3144, 3145, 3147, 3148, 3149, 3155, 4141, 4145
History: 1160, 1161, 3179, 3185, 3201, 3202, 3211, 3212, 3213, 3241, 3242, 3251, 3252, 3256, 3259, 3261, 3281, 3285, 3288, 3290, 3295, 3296, 4610

Economics: 1101, 2101, 2102, 3170
Afro-American and African Studies: 1101, 1102, 2203, 2204
Philosophy: 3217*
Religious Studies: 2108, 3137
Criminal Justice: 3102, 3110, 3120, 3140, 3141, 3150, 3151, 3400
Geography: 2155*, 2160, 3100, 3105
Earth Science: 3150*
Political Science: 1100*, 3101, 3103, 3105, 3109, 3111, 3112, 3113, 3114, 3115, 3116, 3117, 3118, 3119, 3120, 3121, 3122, 3133, 3157
Sociology: 2122, 2132, 2171, 3110, 3125, 3480, 4124, 4163, 4632

**Courses with an asterisk are especially recommended for American Studies students.*

AMERICAN STUDIES (AMST) COURSE DESCRIPTIONS

AMST 3000. Topics in American Studies. (3) Introduction to the interdisciplinary approach, demonstrating how traditionally distinct disciplines, such as literature and history, or art and political science, interrelate and contribute to an understanding of an American topic. May be repeated for credit with permission of the student's adviser. (Not limited to American Studies students.) *(Yearly)*

AMST 3100. Introduction to American Studies. (L or C) (3) Introduction to American culture through an in-depth study of a single decade or era, such as the 1830s, 1890s, 1920s, 1950s or 1960s. Focus on how diverse social, economic, artistic, literary, philosophical and political forces have shaped American society. Students examine the complex and multifaceted nature of American culture, both as it pertains to the specific era under study and to the present day. *(Fall, Spring)*

AMST 3210. Childhood in America. (C) (3) Exploration of the changing nature of childhood in American society. Examines how social and economic developments have affected the child's position in the family, the workplace and the school. Child-rearing philosophies and techniques from the colonial period to the present and the history of children's literature, toys and entertainment will be studied. *(Fall) (Alternate years)*

AMST 3800. Independent Study or Directed Reading in American Studies. (3) May be repeated once for credit, with permission of the student's adviser. (Not limited to American Studies students but should be under the supervision of an American Studies adviser or designee.) *(On demand)*

Department of Biology

Chairperson: Professor Leamy; *Professors:* Barden, Edwards, Matthews, Menhinick, Oliver, Thomas, Watts; *Professors Emeritus:* Hechenbleikner, Hildreth; *Associate Professors:* Langsam, Mellichamp, Ostrowski, Peters, Reynolds, Travis; *Assistant Professors:* Bashor, Huet-Hudson, Hudson, Schneider

The biological sciences are important in many areas of human endeavor encompassing wide-ranging career opportunities in medicine and allied health professions, education, research and industry. The Department of Biology offers undergraduate programs leading to the Bachelor of Arts degree and the Bachelor of Science degree. Both provide a firm foundation in the basic principles of biology as background to understanding the biological world, and as preparation for many technical careers, careers in education, or for advanced studies in academic or professional programs.The minor in biology is offered for students who desire a background in biology as an adjunct to their major.

Biology programs can be tailored to fit the individual student's needs and interests. Through course selection, the student can emphasize many areas within biology: plant sciences, including horticulture, systematics, and plant physiology and ecology; animal sciences, that include behavior, morphology and physiology; microbial science, including virology and microbial physiology; cellular/molecular studies, such as genetics, development, immunology and biotechnology; and

environmental sciences, including ecology and evolution. Opportunities for individual activity occur at every level from undergraduate research and tutorials with faculty in the junior and senior courses to honors research projects in the senior year.

A program in medical technology is offered in cooperation with other institutions.

BACHELOR OF ARTS

A major in biology leading to the B.A. degree consists of 32 semester hours of biology including: (1) a core sequence of Plant BIOL 2222, Animal BIOL 2233, and Cell BIOL 3111; (2) one course in each of three areas: Genetics (BIOL 4166), Ecology (BIOL 4144), and Physiology (BIOL 4272 or 4273); and (3) seminar (BIOL 3600). **Note:** *A grade of C or better is required in BIOL 2222, 2223, and 3111 in order to graduate.* The B.A. degree requires five biology laboratories. Additional requirements are CHEM 1101, 1102, and 2131, with associated labs, and six semester hours of mathematics (including STAT 1221). Care should be taken in selecting electives to ensure completion of University requirements.

BACHELOR OF ARTS WITH AN OPTION IN MEDICAL TECHNOLOGY

Upon satisfactory completion of training at Schools of Medical Technology at Carolinas Medical Center or Presbyterian Hospital in Charlotte, which are affiliated with UNC Charlotte in the medical technology program, a student may receive a B.A. degree in biology from UNC Charlotte. (It is possible to obtain a B.S. degree by careful planning with the adviser, although a B.S. degree will typically require a longer period of time than will the B.A. degree). The student must take Animal BIOL 2233, Cell BIOL 3111, Genetics BIOL 4166, Microbiology BIOL 4255, Immunology BIOL 4191, Animal Physiology BIOL 4273, Seminar BIOL 3600, and 16 hours of chemistry (CHEM 1101, 1101L, 1102, 1102L, 2131, 2131L, and chemistry elective); have a total of 24 hours of biology and a total of four laboratories in biology at UNC Charlotte; and have a 2.0 grade point average overall and in the major at the end of the junior year. The student must have a total of 90 hours including 24 hours of biology at UNC Charlotte; the remaining 30 hours and eight hours of biology will be accepted from the school of medical technology. The final 30 hours counted toward the degree and the last eight hours counted toward the major prior to entering a school of medical technology must be taken at UNC Charlotte. Gaining admission to the school of medical technology is the responsibility of the student. Additional information is available from the Department of Biology.

BACHELOR OF SCIENCE

In addition to the 32 hours of biology required for the B.A. degree, a student working toward the B.S. degree is required to take 12 hours in biology for a total of 44 hours, two additional laboratories for a total of seven, CHEM 2132 with associated laboratory, PHYS 1101, 1102 and associated labs, and three additional hours of mathematics (including STAT 1221) or computer science (excluding CSCI 1101) for a total of nine hours.

BIOLOGY MINOR

A minor in biology requires: (1) BIOL 2222 and 2233 (or BIOL 1110 and 1115), and 10 hours of electives for a total of 18 hours. One laboratory beyond the introductory sequence and a minimal grade point average of 2.0 in the biology hours submitted for the minor are required. Students pursuing a biology minor are responsible for meeting all course prerequisites and corequisites.

HONORS PROGRAM IN BIOLOGY

The Honors Program is a research program for students majoring in biology.

Admission. Students are invited to participate in the program during their junior year by the Department Honors Committee. To qualify, a student must have completed 60 semester hours, including at least 15 hours at UNCC. At least 36 of the completed hours must be in science and mathematics. Students must have a 3.2 overall grade point average, as well as a 3.2 GPA in biology.

An honors adviser and a supervisory committee will be chosen.

Courses. To graduate with honors, a student must complete BIOL 3701—Honors Research I and BIOL 3702—Honors Research II with a 3.5 average or better.

Certification Requirements. A cumulative grade point average of 3.2 or greater must be maintained. An honors thesis is required and the student must present a seminar on the project.

For more information, contact the Department of Biology.

COOPERATIVE EDUCATION PROGRAM

Students majoring in biology may obtain practical work experience while pursuing their degrees. The Cooperative Education Program allows qualified students either to alternate semesters of academic study with semesters of work experience or to combine academic study and work during the same semester. The work experience is arranged by the Office of Experiential Learning and must be approved by the Department of Biology. Placements are based on a student's academic interests and on the availability of appropriate positions and are carried out under the supervision of a biology faculty member who serves as Co-op adviser. Work semesters are followed by participation in the Biology Cooperative Education Seminar.

SUGGESTED SCHEDULE: B.A., BIOLOGY

Freshman Year

BIOL 2222	4	BIOL 2233	4
CHEM 1101, 1101L, 1101P	4	ENGL 1102	3
ENGL 1101	3	CHEM 1102, 1102L, 1102P	4
MATH 1100 or 1101 or 1103	3	STAT 1221	3
Elective	3	Elective	3-4

Sophomore Year

BIOL 3111	4	BIOL area requirement/elective	4
CHEM 2131, 2131L, 2131P	4	Electives	9
BIOL area requirement/elective	4		
Electives	3-6		

Junior Year

BIOL area requirement/elective	3-8	BIOL area requirement/elective	3-8
Electives	9	Electives	9

Senior Year

BIOL 3600	1	BIOL Electives	3-6
BIOL Electives	3-6	Electives	6-9
Electives	6-9		

SUGGESTED SCHEDULE: B.S., BIOLOGY

Freshman Year

BIOL 2222 4	BIOL 2233 4
CHEM 1101, 1101L, 1101P 4	CHEM 1102, 1102L, 1102P 4
ENGL 1101 3	ENGL 1102 3
MATH 1100 or 1101 or 1103 3	STAT 1221 3
Elective 3	Electives 3-4

Sophomore Year

BIOL 3111 4	BIOL area requirement/elective 3-8
CHEM 2131, 2131L, 2131P 4	CHEM 2132, 2132L, 2132P 4
MATH 1120 or 1141, or Computer Science* 3	Electives 6-9
BIOL area requirement/elective 3-4	
Elective 3	

Junior Year

BIOL area requirement/elective 6-8	BIOL area requirement/elective 6-8
PHYS 1101 4	PHYS 1102 4
Electives 6-9	Electives 3-6

Senior Year

BIOL Electives 6-8	BIOL 3600 1
Electives 6-9	Biology Electives 8
	Electives 6

**Computer Science 1101 does not fulfill Biology requirement.*

SUGGESTED SCHEDULE: MEDICAL TECHNOLOGY OPTION

Freshman Year

CHEM 1101, 1101L, 1101P 4	BIOL 2233 4
MATH 1100 or 1101, 1101P or 1103 3	CHEM 1102, 1102L, 1102P 4
ENGL 1101 3	MATH 1221 3
Electives 6	ENGL 1102 3

Sophomore Year

BIOL 3111 4	BIOL 4166 3
CHEM 2131, 2131L, 2131P 4	Chemistry Elective 4
Electives 3-6	Electives 7-8

Junior Year

BIOL 4255, 4255L 4	BIOL 3600 1
BIOL elective 3-4	BIOL 4191, 4191L 4
Electives 7-8	BIOL 4273 3
	Electives 7-9

Senior Year

At an approved School of Medical Technology.

BIOLOGY (BIOL) COURSE DESCRIPTIONS

Note: Credits for all courses numbered 2000 and above (except BIOL 2259 and 2273) are accepted toward the major. However, credits for courses numbered 1000 to 1259L are not counted as credits toward the major.

Courses for Undergraduates

BIOL 1000. Special Topics in Biology. (1-4) Prerequisites: vary with course. Special topics for non-majors in biology. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 1110. Principles of Biology. (S) (4) Fundamental principles of life. An introduction to biology with a human emphasis. Three lecture hours and one laboratory period of three hours a week. *(Fall, Spring)*

BIOL 1115. Principles of Biology II. (S) (4) Prerequisite: BIOL 1110 or consent of the instructor. A continuation of introductory biology for non-majors, BIOL 1110. Fundamental principles of life with a human emphasis. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 1117. Natural History. (1) Prerequisite: BIOL 1110. Plant and animal identification, ecological aspects of plant and animal distribution, the importance of conservation of natural resources and basic greenhouse horticulture practices. Three lecture hours and one laboratory period of three hours a week.

BIOL 1166. Human Heredity and Diversity. (3) Prerequisite: BIOL 1110 or 2233. Not available for credit if credit has been given for BIOL 3166 or 4161. Basic principles of human heredity as applied to individuals and populations. Role of heredity and environment on the expression of physical, mental and behavioral traits. Three lecture hours a week. *(Spring)*

BIOL 2000. Special Topics in Biology. (1-4) Prerequisites: vary with course. Special introductory topics for biology majors. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 2041. Natural Resources. (2) Natural resource conservation and careers, including forestry, fisheries and wildlife management. Two lecture hours a week. *(Fall)*

BIOL 2041L. Natural Resources Laboratory. (1) Corequisite: BIOL 2041. Does not satisfy the departmental lab requirement or the general degree requirement in natural science. Field trips and applied techniques in natural resource management. One laboratory period of three hours a week. *(Fall)*

BIOL 2222. Plant Biology. (4) The morphology, function, reproduction, phylogeny and ecology of plants. Three lecture hours and one laboratory period of three hours a week. *(Fall, Spring)*

BIOL 2233. Animal Biology. (4) The morphology, function, development, phylogeny and ecology of the principal invertebrate and vertebrate types. Three lecture hours and one laboratory period of three hours a week. *(Fall, Spring)*

BIOL 2259. Bacteriology. (3) Prerequisite: BIOL 1110 and one semester of chemistry. Basic physiology of bacteria, fungi, protozoa and viruses, with emphasis on host-parasite interaction and control and epidemiology of infectious diseases. Three lecture hours a week. *(Spring)*

BIOL 2259L. Bacteriology Laboratory. (1) Prerequisite or corequisite: BIOL 2259. One laboratory period of three hours a week. *(Spring)*

BIOL 2273. Human Anatomy and Physiology. (3) Prerequisites: CHEM 1103, 1104. Fundamentals of the anatomy and physiology of the human body. Three lecture hours a week. *(Fall)*

BIOL 2273L. Human Anatomy and Physiology Laboratory. (1) Prerequisite or corequisite: BIOL 2273. One laboratory period of three hours a week. *(Fall)*

BIOL 2274. Human Anatomy and Physiology II. (3) Prerequisite: BIOL 2273. Continuation of BIOL 2273. Three lecture hours a week. *(Spring)*

BIOL 2274L. Human Anatomy and Physiology Laboratory II. (1) Prerequisite or corequisite: BIOL 2274. One laboratory period of three hours a week. *(Spring)*

BIOL 3000. Special Topics in Biology. (1-4) Prerequisite: vary with course. Special topics for intermediate level majors in biology. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 3005. Integrative Studies in Biology. (3) No credit toward a biology major, except one hour which may be substituted for Biology 3600. A course for, but not limited to, persons preparing to teach grades 9-12. An integration of the attitudes and techniques necessary to teach laboratory-oriented courses. Three lecture hours a week. *(Fall)*

BIOL 3111. Cell Biology. (3) Prerequisite or corequisite: BIOL 2222, 2223 and CHEM 2131. Structure and function of cells. Three lecture hours a week. *(Fall, Spring)*

BIOL 3111L. Cell Biology Laboratory. (1) Prerequisite or corequisite: BIOL 3111.

BIOL 3202. Horticulture. (3) Prerequisite: BIOL 2222. Principles of horticulture, greenhouse management, environmental factors, production and maintenance of cultivars, and landscaping. Three lecture hours a week. *(Fall)*

BIOL 3202L. Horticulture Laboratory. (1) Prerequisite or corequisite: BIOL 3202. Greenhouse work, plant identification, and field trips. One laboratory period of three hours a week. *(Fall)*

BIOL 3215. Economic Botany. (3) Prerequisite: BIOL 2222. Origins of agricultural plants; history of the use and misuse of plants by humans; consideration of the major groups of crop, spice, medicinal, and drug plants. Three lecture hours a week. *(Spring)*

BIOL 3229. Field Botany. (3) Prerequisite: BIOL 2222 or consent of Department. A field course stressing identification, classification and habitat of the vascular plants, particularly of the Piedmont, but also including the Coastal Plain and the mountains of North Carolina. Six hours a day for 10 days. *(Presession)*

BIOL 3405. Internship in Community Education and Service. (1-3) Prerequisites: junior standing, acceptance into the program and approval of the Department. A project-oriented, service-learning internship with cooperating community organizations. The Department of Biology has the option of recognizing this credit as fulfilling departmental requirements and granting permission to repeat for credit. Maximum credit toward major is three hours.

BIOL 3500. Biology Cooperative Education Experience. (0) Prerequisite: approval by the Department and the Office of Experiential Learning. Required of students participating in the Cooperative Education Program during the semesters in which they are working. Course may be repeated. *(Fall, Spring)*

BIOL 3501. Biology Cooperative Education Seminar. (1) Prerequisite: participation in BIOL 3500. Required of students in the semester following each work semester of their Cooperative Education experience. Student presentations of oral and written reports. *(Fall, Spring)*

BIOL 3600. Seminar. (1) Required of all majors, normally taken during the senior year. Student presentation of oral and written reports from pertinent biological literature. One hour a week. May be repeated for credit. *(Fall, Spring)*

BIOL 3701. Honors Research I. (3) Independent honors project. By invitation; seniors only. *(Fall, Spring, Summer)*

BIOL 3702. Honors Research II. (3) Prerequisite: BIOL 3701. Independent honors project thesis preparation and seminar presentation. May be substituted for BIOL 3600. *(Fall, Spring, Summer)*

BIOL 3800. Tutorial in Biology. (1-4) Prerequisite: consent of Department. A course to permit junior and senior biology majors to engage in directed study in their fields of interest. Maximum credit toward major: two hours for B.A.; four hours for B.S. May be repeated for credit. *(Fall, Spring, Summer)*

BIOL 3900. Investigations in Biology. (1-4) Prerequisite: consent of the Department. This course is designed to allow junior and senior biology majors to initiate research projects in their respective fields of interest. Maximum credit toward major: two hours for B.A.; four hours for B.S. May be repeated for credit as topics vary. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduate Students

BIOL 4000. Special Topics in Biology. (1-4) (1-4G) Prerequisites and credit hours vary with topics. Special topics for advanced undergraduates. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(Fall, Spring)*

BIOL 4111. Evolution. (3) (3G) Prerequisites: BIOL 4166. Theories of evolution and forces which affect gene frequencies. Three lecture hours a week. *(Fall)*

BIOL 4133. Parasitology. (4) (4G) Prerequisite: BIOL 2233. Morphology, life cycles, ecology, taxonomy and economic importance of parasites. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 4139. Epidemiology. (3) (3G) Prerequisite: BIOL 2259 or 4255. History and practices of epidemiology with emphasis on modes of transmission of clinically important infectious agents and the analysis of epidemiological data. Three lecture hours a week.

BIOL 4144. Ecology. (3) (3G) Prerequisites: BIOL 2222 and 2233. Interrelationships of organisms and their environment. Three lecture hours a week. *(Fall, Spring)*

BIOL 4144L. Ecology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4144. One laboratory period of three hours a week. *(Fall, Spring)*

BIOL 4149. Limnology and Oceanography. (4) (4G) Prerequisites: BIOL 2222 and 2233. Geological, physical, chemical and biological aspects of lakes, streams, estuaries and oceans. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

BIOL 4161. Human Genetics. (3) (3G) Prerequisite: BIOL 4166. (Credit not available for both BIOL 4161 and 1166.) Inheritance of physical and mental characteristics in humans. Effects of mutation, selection, migration and environment are emphasized. Three lecture hours a week. *(Spring)*

BIOL 4166. Genetics. (3) (3G) Prerequisite: BIOL 3111. Basic concepts of heredity; principles of classical, molecular, and population genetics. Three lecture hours a week. *(Fall, Spring, Summer)*

BIOL 4166L. Genetics Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4166. One laboratory period of three hours a week. *(Fall, Spring)*

BIOL 4169. Cytogenetics. (4) (4G) Prerequisite: BIOL 3111. Plant and animal cells, with emphasis on problems of chromosomal organization, function and behavior including the role of chromosome number and aberrations in speciation and evolution. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 4171. Cell Physiology. (3) (3G) Prerequisites: BIOL 3111. The fundamental physiochemical properties of cells. Three lecture hours a week. *(Fall)*

BIOL 4191. Immunology. (3) (3G) Prerequisites: BIOL 4166. Cellular, molecular and genetic basis for immunity; physical chemistry of antigens and antibodies and their interactions; defense mechanisms. Three lecture hours a week. *(Spring, Summer)*

BIOL 4191L. Immunology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4191. One laboratory period of three hours a week. *(Spring)*

BIOL 4199. Molecular Biology. (3) (3G) Prerequisites: BIOL 4166 and CHEM 2132. Structural and functional interaction of nucleic acids and proteins in the replication, transcription and translation of genetic material. Three lecture hours a week. *(Fall)*

BIOL 4205. Advanced Horticulture. (3) (3G) Prerequisite: BIOL 3202. Topics in ornamental horticulture and landscaping, including greenhouse projects and field trips. Two lecture hours and three hours of lab a week. *(Spring)*

BIOL 4221. Plant Systematics. (4) (4G) Prerequisite: BIOL 3202 or 2222. Identification and classification of vascular plants, including experimental concepts of speciation. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 4223. Cryptogamic Botany. (4) (4G) Prerequisite: BIOL 2222. The identification, structure, function, ecology and evolutionary relationships of algae, bryophytes, and ferns. Three lecture hours and one three-hour lab a week. *(Fall)*

BIOL 4229. Dendrology. (4) (4G) Prerequisite: BIOL 4221. The identification, structure, function, reproduction, ecology, and evolutionary relationships of woody plants. Three lecture hours and one three-hour lab a week. *(Fall)*

BIOL 4231. Invertebrate Zoology. (4) (4G) Prerequisite: BIOL 2233. Taxonomy, anatomy, physiology and life histories of selected invertebrates. Three lecture hours and one laboratory period of three hours a week.

BIOL 4233. Vertebrate Zoology. (4) (4G) Prerequisite: BIOL 2233. Taxonomy, anatomy, physiology and life histories of vertebrates. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

BIOL 4243. Animal Behavior. (3) (3G) Prerequisite: BIOL 2233. An ethological approach to how animals respond to their environment. Causation, development and adaptive significance of behavior in social systems. Three lecture hours a week. *(Fall)*

BIOL 4243L. Animal Behavior Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4243. One laboratory period of three hours a week. *(Fall)*

BIOL 4255. Microbiology. (3) (3G) Prerequisites: BIOL 3111. Morphology, metabolism, physiology, pathogenicity and ecology of micro-organisms. Three lecture hours a week. *(Fall)*

BIOL 4255L. Microbiology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4255. One laboratory period of three hours a week. *(Fall)*

BIOL 4272. Plant Physiology. (3) (3G) Prerequisites: BIOL 3111. Metabolic and physiological processes of plants and conditions which affect or regulate these processes. Three lecture hours a week. *(Fall)*

BIOL 4272L. Plant Physiology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4272. One laboratory period of three hours a week. *(Spring)*

BIOL 4273. Animal Physiology. (3) (3G) Prerequisite: BIOL 3111. Fundamental control mechanisms that operate to maintain the homeostatic state. Three lecture hours a week. *(Spring)*

BIOL 4273L. Animal Physiology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4273. One laboratory period of three hours a week. *(Spring)*

BIOL 4274. Comparative Invertebrate Physiology. (3) (3G) Prerequisites: BIOL 4273 and CHEM 2131. Maintenance of body fluids; acquisition, processing and distribution of nutrient materials; gas exchange; movement and coordination. Three hours a week. *(Spring)*

BIOL 4274L. Comparative Invertebrate Physiology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4274. One laboratory period of three hours a week. *(Spring)*

BIOL 4282. Developmental Plant Anatomy. (3) (3G) Prerequisite: BIOL 3111. Study of plant cells, tissues, organs and patterns of growth and differentiation. Three lecture hours a week. *(Spring)*

BIOL 4282L. Developmental Plant Anatomy Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4282. One laboratory period of three hours a week. *(Spring)*

BIOL 4283. Animal Development. (3) (3G) Prerequisite: BIOL 3111. Developmental processes occurring chiefly during gametogenesis, fertilization, early embryogenesis and organogenesis. Three lecture hours a week. *(Fall)*

BIOL 4283L. Animal Development Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 4283. One laboratory period of three hours a week. *(Fall)*

BIOL 4291. Histology. (4) (4G) Prerequisite: BIOL 3111. Animal tissues and organs; techniques of preparing tissues for analysis. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 4293. Comparative Vertebrate Anatomy. (4) (4G) Prerequisite: BIOL 2233. Comparative studies of the anatomy, physiology and functional adaptations of selected vertebrates with emphasis on evolutionary developments, especially in mammals. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

The 5000-level courses are primarily graduate courses; however, advanced undergraduates may enroll in those courses for undergraduate credit. For complete course descriptions, see pages 325-329.

Department of Chemistry

Chairperson, Charles H. Stone Professor: Rillema; *Charles H. Stone Professor Emeritus:* Burson; *Professors:* Bush, Crosthwaite, DuBois, Gibson; *Professor Emeritus:* Kuppers; *Associate Professors:* Howard, Jones, Mattingly, Walsh; *Assistant Professors:* Brown, Daignault, Ogle, Risley; *Lecturers:* Allen, Carlin, Greenberg, Loffredo, White

Chemistry is a discipline fundamental to a wide variety of careers in industry, research and the allied health fields. A strong foundation in chemistry is necessary for careers in medicine, molecular biology, biochemistry, industrial or government research, pharmacy, high school teaching and chemical engineering. A background in chemistry may also be useful for careers in chemical sales, industrial management, business administration and environmental management.

The Chemistry Department offers a B.S. degree and a research-based M.S. degree, which provide the background necessary for a career in industry or for further graduate studies in chemistry and related fields. In addition, a B.A. degree in chemistry is available for students who plan to pursue professional studies in areas such as medicine, dentistry, veterinary medicine and optometry. The B.S. degree is approved by the American Chemical Society.

Programs leading to careers in medical technology, pharmacy and chemical engineering are available in cooperation with other institutions.

BACHELOR OF SCIENCE

Students planning to start careers as chemists with the baccalaureate degree and those who intend to prepare for graduate study in chemistry should pursue the B.S. degree.

A major in chemistry leading to the B.S. degree consists of a minimum of 45 semester hours of chemistry, including CHEM 1101, 1102, 1101L, 1102L (or 1106L), 2131, 2132, 2131L, 2132L, (or 2136L), 3111, 3141, 3142, 3141L, 3142L, 3695, 4111, 4121, two semesters of 4695, two semesters of 4900, 4133 and either 4134 or 4135. (Credit toward the 45 hours required for the B.S. degree will not be given for both CHEM 4134 and 4135.) Related work in mathematics and physics must include MATH 1141, 1142, and 2141 or 2171 and PHYS 2221, 2231, 2221L, and 2231L. Proficiency in a foreign language through the 2202 course level is recommended for the B.S. degree. It should be noted that some graduate programs require a proficiency in a foreign language. All students majoring in the B.S. program (even those operating under the old general degree requirements) are required to satisfy the UNCC general degree language requirements.

BACHELOR OF ARTS

A major in chemistry leading to the B.A. degree consists of a minimum of 28 semester hours of chemistry including CHEM 1101, 1102, 1101L, 1102L (or 1106L), 2131, 2132, 2131L, 2132L and 3111. Related work must include MATH 1141, 1142 and a complete sequence of physics courses selected from one of the following options, A, B or C: (A.) PHYS 1101, 1102; (B.) PHYS 2221, 2231, 2221L, 2231L; or (C.) PHYS 1102, 2221, 2221L. Credit toward the 28 hours required for the B.A. degree will not be given for CHEM 3695, 4695 or 4900, or for both 4134 and 4135. Topics courses, such as CHEM 3090 and 5090, cannot be included within the 28 hours without prior departmental approval.

The B.A. curriculum can be tailored to fit the needs of those preparing for medical and dental schools, those considering graduate work in sciences closely related to chemistry, and those desiring a liberal education with concentration in chemistry and related natural sciences.

Teacher Certification. Students who complete a major in chemistry automatically meet the chemistry subject matter requirements for teacher certification on the secondary level in North Carolina. Students seeking teacher certification should consult a co-adviser in the College of Education and Allied Professions for detailed planning of their professional education.

BACHELOR OF ARTS WITH AN OPTION IN MEDICAL TECHNOLOGY

A student majoring in chemistry may complete the departmental requirements for the B.A. degree in three years. Upon satisfactory completion of training in medical technology at a school of medical technology which has been approved by the Accrediting Agency for Clinical Laboratory Science for the Committee on Allied Health Education and Accreditation and UNC Charlotte, the student may receive a B.A. degree in chemistry from UNCC. Gaining admission to an approved school of medical technology is the responsibility of the student. A maximum of 30 hours will be accepted from the school of medical technology. Four of these hours will apply toward the requirements for the major in chemistry. The student must have at least a 2.0 grade point average, overall and in the major, at the end of the junior year. The final 30 hours counted toward the degree and the last 12 hours counted toward the major prior to entering a school of medical technology must be taken at UNCC. The student may obtain information from his departmental adviser concerning those Schools of Medical Technology at Memorial or Presbyterian Hospitals in Charlotte, which are affiliated with UNCC in this program. Individual applications for admission to a particular school of medical technology must be submitted.

PREPROFESSIONAL OPTIONS WITH CHEMISTRY AS A MAJOR

Students majoring in chemistry (B.A. or B.S.) who are planning future studies in medicine, dentistry or other allied health professions should take as electives: BIOL 2111, CHEM 3175, and at least one additional biology course offered at the 3000 or 4000 level.

Chemical engineering and pharmacy students also have the option of majoring in chemistry. Interested students should consult pages 300-307 of this *Catalog* under "Preparation for Professional Schools" for the appropriate suggested curriculum.

MINOR IN CHEMISTRY

A minor in chemistry consists of 23 semester hours of chemistry including CHEM 1101, 1101L, 1102, 1102L, 2131, 2131L, 2132, 2132L, either 3111 or 4171, and three additional semester hours of coursework at or above the 2000 level. A minimum grade point average of 2.0 in these chemistry courses is required. Credit toward the 23 hour total will not be given for either CHEM 4695 or 4900. Special topics courses such as CHEM 3090 and CHEM 5090 may be included with prior departmental approval.

HONORS PROGRAM IN CHEMISTRY

This program is intended primarily for chemistry majors. It is a research-oriented program. Details are available from the Chemistry Department.

Admission. Consideration for admission to the program may be initiated by the student or by any faculty member. The Honors Committee of the Chemistry Department will formally approve admission. The student will formally enter the honors program at the beginning or halfway through his/her junior year.

Courses. Independent research and seminars.

Certification Requirements. To obtain a degree with Honors in Chemistry, a student must successfully complete two semesters of independent research at the honors level, two semesters of the senior seminar at the honors level, and prepare an honors thesis based on research.

Cooperative Education Experience

Students majoring in chemistry may obtain practical work experience in chemistry before graduation by participating in the Chemistry Cooperative Education Experience any time after the

completion of sophomore year and CHEM 2132. A minimum GPA of 2.5 overall and 2.5 in chemistry is required. At least two semesters of work assignments must be completed concurrent with enrollment in CHEM 3500. Advisers will assist students to design a schedule which accommodates both work assignments and the upper division chemistry courses which are normally offered on alternate semesters.

SUGGESTED SCHEDULE: B.S. DEGREE†

Freshman Year

CHEM 1101*	3	CHEM 1102*	3
CHEM 1101P	0	CHEM 1102P	0
CHEM 1101L	1	CHEM 1102L	1
ENGL 1101	3	ENGL 1102	3
MATH 1141**	4	MATH 1142**	4
FORL 1201	4	FORL 1202	4

Sophomore Year

CHEM 2131	3	CHEM 2132	3
CHEM 2131P	0	CHEM 2132P	0
CHEM 2131L	1	CHEM 2132L	1
MATH 2141 or 2171	3	PHYS 2231	3
PHYS 2221	3	PHYS 2231L	1
PHYS 2221L	1	Elective***	6
Electives***	3		

Junior Year

CHEM 3141	3	CHEM 3695	1
CHEM 3141L	1	CHEM 3142	3
CHEM 3111	4	CHEM 3142L	1
Electives***	9	CHEM 4111	4
		Electives***	6

Senior Year

CHEM 4121	4	CHEM 4133	2
CHEM 4900	2	CHEM 4134 or 4135	2
CHEM 4695	1	CHEM 4900	2
Electives***	9	CHEM 4695	1
		Electives***	9

†The B.S. degree program is approved by the Committee on Professional Training of the American Chemical Society.

**Students can receive credit by examination for CHEM 1101 and 1102. (See page 56.)*

***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*

****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

CHEM 1101*	3	CHEM 1102*	3
CHEM 1101P	0	CHEM 1102P	0
CHEM 1101L	1	CHEM 1106L or 1102L	1
ENGL 1101	3	ENGL 1102	3
MATH 1103**	4	MATH 1141**	4
Electives***	6	Electives***	6

Sophomore Year

CHEM 2131	3	CHEM 2132	3
CHEM 2131P	0	CHEM 2132P	0
CHEM 2131L	1	CHEM 2132L	1
MATH 1142	4	FORL 1202	4
FORL 1201	4	Electives***	9
Electives***	3		

Junior Year

CHEM 3111	4	CHEM Elective	3
Mathematics	3	Mathematics	3
Physics	4	Physics	4
Electives***	4	Electives***	7

Senior Year

CHEM Elective	4	CHEM Elective	4
Electives***	12	Electives***	12

**Students can receive credit by examination for CHEM 1101 and 1102. (See page 56.)*

***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*

****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

SUGGESTED SCHEDULE: B.A. DEGREE, MEDICAL TECHNOLOGY OPTION

Freshman Year

CHEM 1101*	3	CHEM 1102*	3
CHEM 1101P	0	CHEM 1102P	0
CHEM 1101L	1	CHEM 1106L	1
MATH 1103**	3	MATH 1141**	4
ENGL 1101	3	ENGL 1102	3
BIOL 2233	4	Elective**	4
Elective***	3		

Sophomore Year

CHEM 2131	3	CHEM 2132	3
CHEM 2131P	0	CHEM 2132P	0
CHEM 2131L	1	CHEM 2132L	1
MATH 1142	4	FORL 1202	4
FORL 1201	4	Electives***	5
PHYS 1101	4	PHYS 1102	4

Junior Year

CHEM 3111	4	CHEM 3112	4
BIOL 4255	3	BIOL 4166	4
BIOL 4255L	1	BIOL 4191	3
Electives***	9	BIOL 4191L	1
		Electives***	5

Minimum of 90 semester hours required.

Senior Year

At an approved school of medical technology.

**Students can receive credit by examination for CHEM 1101 and 1102. (See page 56.)*
***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*
****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

CHEMISTRY (CHEM) COURSE DESCRIPTIONS

Separate lecture and laboratory sections—Although the laboratory and lecture sections of CHEM 1101, 1102, 1103, 1104, 2131 and 2132 are taught as separate courses, it is strongly recommended that students take the appropriate laboratory concurrently with the lecture. Students with severe scheduling problems or students with course programs that do not require the laboratory may take the lecture without the laboratory. Retention of a laboratory after withdrawing from its associated lecture requires departmental approval

Students using CHEM 1101 and 1102 or CHEM 1103 and 1104 to satisfy the general education requirements for the B.A. and B.S. degree (page 65) must also take CHEM 1101L and 1102L, or CHEM 1103L and 1104L, respectively.

Courses for Undergraduates

CHEM 1101. Principles of Chemistry. (S) (3) Corequisite: CHEM 1101P. Prerequisite or corequisite: MATH 1101 or 1103. A principles-oriented course for science majors. Fundamental postulates and laws of chemistry; the relationship of atomic structure to physical and chemical properties of the elements. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

CHEM 1101L. Principles of Chemistry Laboratory. (S) (1) Prerequisite or corequisite: CHEM 1101. Experimental investigations involving the fundamental postulates and laws of chemistry. One laboratory period of three hours per week. *(Fall, Spring, Summer) (Evenings)*

CHEM 1101P. Principles of Chemistry Problem Session. (0) Corequisite: CHEM 1101. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Spring, Summer) (Evenings)*

CHEM 1102. Principles of Chemistry. (S) (3) Prerequisite: CHEM 1101. Corequisite: CHEM 1102P. Continuation of CHEM 1101. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

CHEM 1102L. Principles of Chemistry Laboratory. (S) (1) Prerequisites: CHEM 1101 and 1101L. Prerequisite or corequisite: CHEM 1102. Continuation of CHEM 1101L. One laboratory period of three hours per week. *(Fall, Spring, Summer) (Evenings)*

CHEM 1102P. Principles of Chemistry Problem Session. (0) Corequisite: CHEM 1102. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Spring, Summer) (Evenings)*

CHEM 1103. General Chemistry. (S) (3) Corequisite: CHEM 1103P. Designed primarily for non-science majors; does not qualify as a prerequisite for any chemistry course other than CHEM 1104. Fundamentals of chemistry and selected topics from inorganic chemistry. Three hours per week. (Credit for both 1101 and 1103 will not be given.) *(Fall, Summer)*

CHEM 1103L. General Chemistry Laboratory. (S) (1) Prerequisite or corequisite: CHEM 1103. Laboratory investigations into the nature of inorganic compounds. One laboratory period of three hours per week. (Credit for both 1101L and 1103L will not be given.) *(Fall, Summer)*

CHEM 1103P. General Chemistry Problem Session. (0) Corequisite: CHEM 1103. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Summer)*

CHEM 1104. General Chemistry. (S) (3) Prerequisite: CHEM 1103. Corequisite: CHEM 1104P. Designed primarily for non-science majors; does not qualify as a prerequisite for any other chemistry course. Continuation of CHEM 1103, with emphasis on organic chemistry and selected topics in biochemistry. Three lecture hours per week. (Credit for both 1102 and 1104 will not be given). *(Spring, Summer)*

CHEM 1104L. General Chemistry Laboratory. (S) (1) Prerequisites: CHEM 1103 and 1103L. Prerequisite or corequisite: CHEM 1104. Continuation of CHEM 1103L, with emphasis on the reactions and characterization of organic compounds. One laboratory period of three hours per week. (Credit for both 1102L and 1104L will not be given.) *(Spring, Summer)*

CHEM 1104P. General Chemistry Problem Session. (0) Corequisite: CHEM 1104. A period designed for weekly problem sessions. (Attendance optional.) *(Spring, Summer)*

CHEM 1106L. Introduction to Modern Laboratory Methods. (1) Prerequisite or corequisite: CHEM 1102. One laboratory period of three hours per week. The laboratory will consist of open-ended studies on topics compatible with the CHEM 1102 lecture materials. A quasi-research approach is used, involving modern instrumentation extensively. The background needed to utilize microcomputers in data acquisition and data reduction is presented. The course is intended for students planning to take additional chemistry courses and can be substituted for the CHEM 1102L requirement for all degrees in chemistry. *(Spring)*

CHEM 2125. Inorganic Chemistry. (3) Prerequisite: CHEM 1102 with a grade of *C* or better. Descriptive inorganic chemistry including acid-based and non-aqueous solvent concepts. Three lecture hours a week. *(Spring) (Alternate Years with 2141)*

CHEM 2131. Organic Chemistry. (3) Prerequisite: CHEM 1101 and 1102, each with a grade of *C* or better. Corequisite: CHEM 2131P. Descriptive principles and techniques of organic chemistry and their applications to reactions of aliphatic and aromatic compounds and natural products. Three lecture hours per week. *(Fall, Spring, Summer)*

CHEM 2131L. Organic Chemistry Laboratory. (1) Prerequisites: CHEM 1101, 1101L, 1102, 1102L, each with a grade of *C* or better. Prerequisite or corequisite: CHEM 2131 with a grade of *C* or better. Laboratory investigations into the physical and chemical properties of organic compounds. One laboratory period of three hours per week. *(Fall, Spring, Summer)*

CHEM 2131P. Organic Chemistry Problem Session. (0) Corequisite: CHEM 2131 with a grade of *C* or better. A period designed for weekly problem sessions (attendance optional) and for administration of two-hour examinations (attendance required). *(Fall, Spring, Summer)*

CHEM 2132. Organic Chemistry. (3) Prerequisite: CHEM 2131 with a grade of *C* or better. Corequisite: CHEM 2132P. Continuation of CHEM 2131. Three lecture hours per week. *(Fall, Spring, Summer)*

CHEM 2132L. Organic Chemistry Laboratory. (1) Prerequisite: CHEM 2131L with a grade of *C* or better. Prerequisite or corequisite: CHEM 2132. Continuation of CHEM 2131L. One laboratory period of three hours per week. *(Fall, Spring, Summer)*

CHEM 2132P. Organic Chemistry Problem Session. (0) Corequisite: CHEM 2132. A period designed for weekly problem sessions (attendance optional) and for administration of two-hour examinations (attendance required.) *(Fall, Spring, Summer)*

CHEM 2136L. Organic Chemistry Laboratory. (1) Prerequisite or corequisite: CHEM 2132. Laboratory investigation involving a research-type project in lieu of CHEM 2132L. Available only upon departmental invitation. *(On demand)*

CHEM 2141. Survey of Physical Chemistry. (3) Prerequisites: CHEM 1102, 1102L with grades of *C* or better, MATH 1120 or one semester of calculus (high school or higher), PHYS 1101 or one semester of physics (high school or higher). A course designed for students in the life sciences or others desiring a one-semester survey of the physical aspects of chemistry. Application of thermodynamics to chemical reactions, energy transfer processes, and chemical and physical equilibria; the study of reaction rates and mechanisms; structure of gases, liquids and solids; molecular structure and spectroscopy. Three lecture hours per week. *(Spring) (Alternate Years with 2125)*

CHEM 3090. Special Topics in Chemistry. (1-4) Prerequisite: consent of Department. May be repeated for credit. Lecture and/or laboratory hours will vary with the nature of the course taught. Topics chosen from analytical, biochemistry, inorganic, organic and physical chemistry. *(On demand)*

CHEM 3111. Quantitative Analysis. (4) Prerequisites: CHEM 1102, 1102L with grades of *C* or better. Introductory course in quantitative and analytical chemistry. Principles of equilibrium, classical and simple instrumental approaches are considered. Two lecture hours and two laboratory periods of three hours each week. *(Fall)*

CHEM 3112. Modern Separation Techniques. (4) Prerequisites: CHEM 2131, 2131L and 3111 with grades of *C* or better. A theoretical and application course in modern separation techniques with emphasis on liquid and gas chromatography. Two lecture hours and two laboratory periods of three hours each week. *(Spring) (Alternate years)*

CHEM 3141. Physical Chemistry. (3) Prerequisites: CHEM 1102, 1102L with grades of *C* or better; PHYS 2231 and 2231L. Prerequisite or corequisite: MATH 2141 or 2171. The application of classical thermodynamics and the phase rule to chemical equilibrium; electrochemistry; the kinetic theory of gases and elements of statistical mechanics applied to chemical processes; atomic and molecular structure interpreted in quantum mechanical terms. Three lecture hours per week. *(Fall)*

CHEM 3141L. Physical Chemistry Laboratory. (1) Prerequisite or corequisite: CHEM 3141. One laboratory period of three hours per week. *(Fall)*

CHEM 3142. Physical Chemistry. (3) Prerequisite: CHEM 3141 with a grade of *C* or better. Continuation of CHEM 3141. Three lecture hours per week. *(Spring)*

CHEM 3142L. Physical Chemistry Laboratory. (1) Prerequisite: CHEM 3141L with a grade of *C* or better. Prerequisite or corequisite: CHEM 3142. Continuation of CHEM 3141L. One lab period of three hours per week. *(Spring)*

CHEM 3175. Introductory Biochemistry. (3) (3G) Prerequisite: CHEM 2132 with a grade of *C* or better. (Not available for graduate credit to students in the Chemistry Department.) The chemical constitution of living matter, biochemical processes. Three lecture hours per week. *(Fall)*

CHEM 3175L. Introductory Biochemistry Laboratory. (1) (1G) Prerequisite: CHEM 2132L with a grade of *C* or better. Prerequisite or corequisite: CHEM 3175. (Not available for graduate credit to students in the Chemistry Department.) A series of laboratory investigations into the chemical composition of living matter and the biochemical processes of life, introducing experimental techniques of modern biochemical research. Eleven four-hour lab periods per semester. *(Fall)*

CHEM 3197. Internship in Community Education and Service. (1-3) Prerequisites: junior standing, acceptance into the program and approval of the Department. A project-oriented, service learning internship with cooperating community organizations. (Credit toward the B.A. and B.S. degrees in chemistry will not be given.) May be repeated for credit with Department permission. Offered on a *Pass/No Credit* basis only. *(On demand)*

CHEM 3500. Chemistry Cooperative Education Experience. (0) Prerequisites: Completion of the sophomore year, chemistry through 2132 and acceptance into the Cooperative Education Program. Enrollment in this course is required for chemistry majors during each semester or summer when they are working on a co-op assignment. May be repeated. Evaluation is S/U. *(On demand)*

CHEM 3695. Chemistry Seminar. (W) (1) Introduction to typical search methods, incl u d ing computer searching, for the chemical reference works and chemical literature. Use of these search techniques for background development. Writing short papers on assigned topics in journal format. One three hour laboratory session per week. *(Spring)*

Courses for Advanced Undergraduates and Graduate Students

CHEM 4111. Instrumental Analysis. (4) (4G) Prerequisites: CHEM 3111, 3141, 3141L with a grade of *C* or better. A discussion of selected modern instrumental methods of analysis, including theory and practice, with considerable attention given to the instrument and elementary electronics involved in the techniques. Two lecture hours, two three-hour lab periods per week. *(Spring)*

CHEM 4112. Applied Microcomputer Interfacing in Chemistry. (4) (4G) Prerequisite: departmental approval. Three lecture hours and one lab period of three hours each week. Presentation of the background needed to apply computer interfacing in chemical research, including machine language programming and elementary digital electronics, and discussion of application of computer automation in chemical research. The laboratory illustrates solutions to solving interfacing problems. No background in programming or electronics required. *(Spring) (Alternate years)*

CHEM 4121. Advanced Inorganic Chemistry. (4) (4G) Prerequisites: CHEM 3142, 3142L with a grade of *C* or better. Theoretical inorganic chemistry including the application of physicochemical principles to the study of inorganic systems. Laboratory work involves inorganic preparations and characterization techniques. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

CHEM 4133. Methods of Organic Structure Determination. (2) (2G) Prerequisites: CHEM 2132, 2132L with grade of *C* or better. Study and application of modern techniques, primarily spectroscopy, to determine the structure of organic molecules. One hour of lecture and one laboratory period of three hours each week. *(Spring)*

CHEM 4134. Organic Reaction Mechanisms. (2) (2G) Prerequisites: CHEM 2132, 2132L with grade of *C* or better. Mechanistic and theoretical topics which are beyond the scope of CHEM 2131/2132, including orbital symmetry control of organic reactions, the Hammett Equation and other linear free energy relationships, heterocyclic compounds, polycyclic aromatic compounds, organic photochemistry, carbenes, nitrenes, arynes and other short lived, reactive intermediates. Two hours of lecture each week. *(Spring) (Alternate years)*

CHEM 4135. Concepts and Techniques in Organic Synthesis. (2) (2G) Prerequisite or corequisite: CHEM 4133. Modern techniques of organic synthesis. Laboratory work will include one or more multi-step syntheses of complex molecules. One hour of lecture and one laboratory period of three hours each week. *(Spring) (Alternate years)*

CHEM 4145. Advanced Physical Chemistry. (3) (3G) Prerequisite: CHEM 3142 with a grade of *C* or better. Topics selected from quantum chemistry and/or statistical thermodynamics. Three lecture hours per week. *(On demand)*

CHEM 4171. Biochemical Instrumentation. (4) (4G) Prerequisites: CHEM 3174 and 3175L with grade of *C* or better or the consent of the department. Modern inst rumental methods used in biorelated areas such as biochemistry, biotechnology and medical technology. Theory and practice. Potentiometry, centrifugation, electrophoresis, chromatography, spectrophotometry. Chemistry majors may not replace other courses required for the B.S. Degree with this course. Two lecture hours and two three hour labor atory periods per week. (Spring)

CHEM 4175. Physical Biochemistry. (3) (3G) Prerequisites: CHEM 2132, 2132L, and 3141 with a grade of *C* or better. Colloid systems, equilibria in biological fluids, mass and energy transport in fluids and in association with membranes, energy storage and dissipation with relation to specific chemical bonding, enzyme kinetics. Three lecture hours per week. *(On demand)*

CHEM 4695. Chemistry Seminar. (W) (1) (1G) Prerequisite: CHEM 3695 and senior standing. Discussion of recent developments and special topics in chemistry. Written and oral reports are required. May be repeated for credit. *(Fall, Spring)*

CHEM 4900. Directed Undergraduate Research. (1-4) (1-4G) Prerequisite: consent of the instructor overseeing the research. Independent study and research in any of these fields of chemistry: organic, physical, analytical, inorganic chemistry or biochemistry. Hours for laboratory and library work to be determined. May be repeated for credit. *(Fall, Spring, Summer)*

Advanced undergraduates may take CHEM 5090 for undergraduate credit. See page 333 for complete course description.

Communication Studies

INTERDISCIPLINARY STUDIES

Coordinator: Associate Professor B.J. Hill; *Assistant Professors:* Crane, Leeman, Smilowitz
Lecturers: Adams, Ross, Treadaway

The Communication Studies program offers training in the practice and theory of communication across a variety of contexts. Among these are public communication, organizational communication, interpersonal communication, small group communication, public relations and mass communication. In addition, students examine specific types of communication such as argumentation, debate and persuasion.

COMMUNICATION STUDIES MINOR

The minor in Communication Studies consists of 21 semester hours, which must include: two core courses, COMM 1101 Introductory Speech and COMM 1107 Introduction to Communication Contexts; a required course within the track of study; and an additional 12 semester hours to be selected from a list of approved courses. Additional electives are possible with prior approval of the Communication Studies Coordinator. COMM 3050 Topics in Communication Studies and/or COMM 3880 Independent Study may be included as part of the 12 hours of electives with prior approval of the Coordinator, although these courses may not be substituted for a required course. A maximum of six hours of electives may be cross-applied between tracks for students pursuing double minors. Students must attain an overall GPA of 2.5 in all coursework within the minor. In addition, students must fulfill general education requirements and requirements for their major. Students planning to declare a Communications Studies minor should consult with the Program Coordinator.

TRACKS WITHIN THE MINOR

Communication Theory and Process is a track of study designed for students to obtain a broad understanding of the theory of the human communication process. It is especially beneficial for students planning to pursue advanced study in the field of communication. In addition to COMM 1101 and 1107, each student must take COMM 2100, and 12 hours of electives selected from: COMM 2107, 3101, 3120, 3141, 3145; ENGL 4165; and ANTH 4120.

Mass Media is a track of study designed for students interested in the development of the media as a cultural force and contemporary issues in media criticism. In addition to COMM 1101 and 1107, each student must take COMM 3120, and 12 hours of electives selected from: COMM 2491 (limit three hours), COMM 3101, 3121; POLS 3104; ENGL 2160; EDUC 4135; and ARSC 3400 (limit three hours). (Prior approval by the Coordinator is required for ARSC 3400.)

Organizational Communication is a track of study designed for students anticipating careers involving communication in organizational settings. In addition to COMM 1101 and 1107, each student must take COMM 3141, and 12 hours of electives selected from: COMM 2105, 2107; SOCY 4115; ENGL 2116; MGMT 3160; and PSYC 2171.

Public Address is a track of study designed for those students seeking a well-developed background in the general theory and practice of public communication. In addition to COMM 1101 and 1107, each student must take COMM 2102 and 12 hours of electives selected from: COMM 2103, 3101, 3403 (limit four hours) and EDUC 4135.

Public Relations is a track of study designed for students anticipating careers in the public relations context. The track emphasizes understanding the theory and practice of the role of public relations in society. In addition to COMM 1101 and 1107, each student must take COMM 3145, and 12 hours of electives selected from: COMM 2102, 3101; ENGL 2115, 2160; POLS 3103; EDUC 4135, HUSV 3190; and ARSC 3400 (limited three hours). (Prior approval by the Coordinator is required for ARSC 3400.)

COMMUNICATION STUDIES (COMM) COURSE DESCRIPTIONS

COMM 1101. Introductory Speech. (3) For students who want to upgrade their oral communication skills. Opportunity to study theory and practice of public speaking. Special emphasis placed on constructing and delivering speeches. *(Fall, Spring, Summer) (Evenings)*

COMM 1107. Introduction to Communication Contexts. (3) A survey of the nature and practice of communication in interpersonal, small group, intercultural, organizational, public relations, and mass communication contexts. *(Fall, Spring)*

COMM 2100. Introduction to Communication Theory. (3) Introduces students to traditional and contemporary theories about human communication processes including the nature of theory building, and major theoretical developments within the field of communication. *(Fall, Spring)*

COMM 2101. Introduction to Rhetorical Theory. (3) Evolution of rhetorical theory from ancient to modern times and examination of major rhetorical theorists. Emphasis on using rhetorical theory to better understand contemporary persuasive messages. *(Spring)*

COMM 2102. Advanced Public Speaking. (3) Prerequisite: COMM 1101 or permission of the instructor. Advanced theory and practice of speaking in public. Research, composition, and delivery of various types of speeches and presentations. *(Fall, Spring)*

COMM 2103. Argumentation and Debate. (3) Introduction to the basic theory and skills of argumentation and debate. Discussion of assumptions of argumentation, evidence, reasoning, argument construction, cross-examination, refutation and ethics included. *(Fall)*

COMM 2105. Small Group Communication. (3) Principles of discussion and deliberation in small groups. Practice in organizing, leading and participating in various forms of group communication. Emphasis on problem solving and leadership skills. *(Fall, Spring, Summer) (Evenings)*

COMM 2107. Interpersonal Communication. (3) Prerequisite: COMM 1101. Study of the dynamics of one-to-one human communication. The relation of language to human communication, perception and reality, self-concept, nonverbal communication codes, development of trust and self-disclosure, and development of positive communication style. *(Fall, Spring)*

COMM 2491. WFAE Radio Practicum. (2-3) Prerequisites: COMM 1101 or equivalent and permission of station manager. On-the-air announcing, board operations, and production work at public radio station WFAE. *Pass/No Credit* grading only. No more than three hours of COMM 2491 may be used toward requirements for the minor. Credit given only for work done while student is registered for the course. *(Fall, Spring, Summer)*

COMM 3050. Topics in Communication Studies. (3) Prerequisite: COMM 1101. Timely and important areas relevant to communication studies. May be repeated for credit with permission of the Coordinator. *(On demand)*

COMM 3100. Communication Research Methods. (3) Prerequisites: COMM 2100 and STAT 1222. Methods for systematic investigation of communication behavior in all primary communication contexts including utilization of library materials and quantitative and qualitative techniques for data analysis. *(Spring)*

COMM 3101. Persuasion. (3) Prerequisite: COMM 1101. Emphasis on the theory and practice of persuasion. Topics include attitude modification, attitude formation, source credibility, persuasive strategies, ethics and audience analysis. *(Fall, Spring)*

COMM 3120. Communication and Mass Media. (3) A survey of the function and history of print and electronic media as forms of communication, their influence upon society, and the legal and economic environments in which they operate. *(Fall, Spring)*

COMM 3121. Mass Communication and Society. (3) Examines important issues involving mass communication. Critical study of the effect mass communication exacts on society. *(Spring)*

COMM. 3130. Communication and Public Advocacy. (3) Examination of how symbols are used in public advocacy from both applied and theoretical perspectives with emphasis on rhetorical uses of language and non-verbal symbols in the creation and transmission of public messages. *(Fall, Spring)*

COMM 3141. Organizational Communication. (3) Prerequisites: COMM 1101 and 1107. Examines the importance of the operation of communication processes within organizations and between organizations and their environments. *(Fall, Spring)*

COMM 3145. Communication and Public Relations. (3) Prerequisites: COMM 1101 and 1107. Examines the role of communication in the field of public relations. Special emphasis given to the relationships between communication and the functions of public relations. *(Fall, Spring)*

COMM 3403. Debate Practicum. (2) Prerequisites: COMM 2103 or equivalent and permission of instructor. Application of debate principles and practices as a member of UNCC Debate Team. Research, argument construction and tournament competition required. Can be repeated four times. No more than four hours of COMM 3403, however, may be used toward requirements for the minor. *(Fall, Spring)*

COMM 3880. Independent Study. (1-3) Prerequisites: COMM 1101, permission of instructor and Coordinator. Area of study beyond the scope of current offerings to be devised by student and faculty member. May be repeated. Three hours of COMM 3880 may be used toward the minor with prior approval of the Coordinator. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduate and Graduate Students

COMM 4141. Advanced Organizational Communication. (3) (3G) Prerequisite: COMM 3141. Critical examination of the communication practices of organizations which accomplish such tasks as establishing organizational identification influencing organizational members, and making decisions. Includes application of research methods to assess and analyze an organization's communication practices. *(Spring)*

COMM 4145. Public Relations Lab. (3) (3G) Prerequisites: COMM 3145. Lectures, workshops and guest speakers provide knowledge to enable students to research, design, implement, and complete public relations projects for community-based, not-for-profit organizations. The class is structured and run in a manner similar to a professional public relations agency with students assuming appropriate agency roles. May be repeated once. *(Fall, Spring)*

Department of Criminal Justice

Chairperson: Associate Professor Vogel; *Professors:* Dean, Hirschel; *Associate Professor:* Bohm; *Assistant Professors:* Brinkley, Jamieson, Lumb, Little; *Lecturer:* Donohue

As society and the problems of crime and delinquency have become increasingly complex, so has the field of criminal justice. Courtroom activity has consequences for law enforcement; corrections reforms have consequences for the courts. The criminal justice professional needs knowledge and understanding of all three major components to perform successfully in any one of them. Toward this end the Department of Criminal Justice offers students the opportunity to acquire knowledge of the broader criminal justice system.

Undergraduate students pursuing the academic study of the criminal justice system, a career in a criminal justice field, or preparation for graduate study may select the criminal justice curriculum leading to a Bachelor of Science degree. Transfer students with an associate degree in Corrections, Law Enforcement or Paralegal Studies will take 19 semester hours of required 3000- or 4000-level criminal justice coursework to complete a Bachelor of Science in Criminal Justice. The Department also offers a minor. Students may enroll in the B.S. program on either a full-time or part-time basis. Evening classes are scheduled to accommodate part-time students.

The department also offers a Master of Science degree program in Criminal Justice.

BACHELOR OF SCIENCE

A major in criminal justice requires 31 semester hours of criminal justice courses, including CJUS 1100 Introduction to Criminal Justice, CJUS 3100 Criminal Justice Theory, CJUS 3101 Research Methods in Criminal Justice, and *one* course from *each* of the following areas:

Law Enforcement Area
CJUS 3140 Law Enforcement Administration
CJUS 3141 Law Enforcement Behavioral Systems
CJUS 4000 Topics in Criminal Justice (designated by the department)

Corrections Area
CJUS 3130 Correctional Administration
CJUS 3150 Community Corrections
CJUS 3151 Institutional Corrections
CJUS 4000 Topics in Criminal Justice (designated by the department)

Legal Area
CJUS 3110 Criminal Justice and the Law
CJUS 3121 Juvenile Law
CJUS 3152 Correctional Law
CJUS 4000 Topics in Criminal Justice (designated by the department)

A minimum of a *C* average in all criminal justice coursework and at least a *C* in CJUS 1100, 3100 and 3101 is required.

While not required, students are encouraged to participate in internship programs available through the department. Internships provide opportunities to combine theory and practice in a realistic setting, and to make more judicious career decisions.

CRIMINAL JUSTICE MINOR

A minor in criminal justice is available to all undergraduates except criminal justice majors and requires 18 approved semester hours including: CJUS 1100 and 3100, and 12 semester hours of upper-division criminal justice electives.

SUGGESTED SCHEDULE

During the freshman and sophomore years, students majoring in criminal justice should concentrate on general education requirements.

Freshman Year

CJUS 1100	3	ENGL 1102	3
ENGL 1101	3	FORL 1202, 1202L	4
FORL 1201, 1201L	4	GOAL IV	4
GOAL IV	4	Electives	5

Sophomore Year

GOAL I (W)	3	Elective or GOAL IV	4
GOAL II	3	GOAL II	3
GOAL III	3	GOAL VI (C or X)	3
Elective	3	GOAL V (A or L)	3
GOAL V (L or A)	3	CJUS Elective	3

Junior Year

GOAL I (3000 level W)	3	CJUS 3101	4
GOAL VI (X or C)	3	CJUS 3101L	0
Elective	3	Elective	3
CJUS 3100	3	CJUS Electives	6
CJUS Elective	3	CJUS (Law Enforcement Area)	3

Senior Year

CJUS (Corrections Area)	3	CJUS (Legal Area)	3
CJUS Elective	3	Elective	11
Elective	9		

CRIMINAL JUSTICE (CJUS) COURSE DESCRIPTIOINS

Courses for Undergraduates

CJUS 1100 Introduction to Criminal Justice. (C) (3) Components of the criminal justice system are reviewed and their interrelatedness assessed; law enforcement, corrections and courts discussed; studies of the functions of the system reviewed. *(Fall, Spring, Summer)*

CJUS 2102. Ethics and the Criminal Justice System. (V) (3) Ethical issues in the administration of justice. *(Fall, Spring)*

CJUS 2120. Juvenile Justice. (3) Intensive analysis of the administration of juvenile justice within the United States. Particular emphasis on decision making and procedures of police, courts, and correctional agencies for juveniles. *(Fall, Spring)*

Courses for Advanced Undergraduates

CJUS 3100. Criminal Justice Theory. (3) Theory construction methods; tests of theories; criminological and criminal justice system theory. *(Fall, Spring)*

CJUS 3101. Research Methods in Criminal Justice. (4) Research designs, data collection and data analysis relevant to criminal justice. Three lecture hours and one laboratory period of one hour a week. *(Fall, Spring)*

CJUS 3110. Criminal Justice and the Law. (3) Nature, origins and objectives of criminal sanctions. Substantive and procedural law concerning law enforcement, prosecution and corrections. *(Fall, Spring)*

CJUS 3121. Juvenile Law. (3) Statutory and case law relating to juveniles with special emphasis on the North Carolina Juvenile Code. *(Fall, Spring)*

CJUS 3130. Corrections Administration. (3) General analysis of organization, methods, systems and procedures, problem solving, resource management, legal framework and planning pertinent to youth and adult correctional agencies and institutions. *(Spring)*

CJUS 3140. Law Enforcement Administration. (3) Examination of law enforcement agencies utilizing different organizational and managerial paradigms. Focus on programs that improve the efficiency and effectiveness of law enforcement. *(Fall)*

CJUS 3141. Law Enforcement Behavioral Systems. (3) Current issues in law enforcement. Specific topics include: community relations, stress, the use of force, and the effect of culture on law enforcement. *(Spring)*

CJUS 3150. Community Corrections. (3) Structure, functions and effectiveness of community corrections. Emphasis on the deinstitutionalization movement, community-based treatment centers, community service agencies, work release programs and current trends in community corrections. *(Fall)*

CJUS 3151. Institutional Corrections. (3) Structure, functions and effectiveness of correctional institutions. Emphasis is on the history of corrections, classification of offenders, institutionalization, treatment programs, juvenile training schools and the future of corrections. *(Fall)*

CJUS 3152. Correctional Law. (3) Development, substance and operationalization of the law of corrections. *(Alternate years)*

CJUS 3160. Victims and the Criminal Justice System. (3) A consideration of the relationship between victims of crime and the criminal justice system. Specific topics include an analysis of the characteristics of crime victims, victim reporting and nonreporting patterns, treatment of victims by the various segments of the criminal justice system, victim assistance programs and the issue of compensation and/or restitution for victims of crime. *(Spring, Fall)*

CJUS 3200. Security and Loss Prevention. (3) Overview of the field of private security and loss prevention with emphasis on current legislation, loss prevention, risk management and security countermeasures. *(Yearly)*

CJUS 3400. Criminal Justice Practicum. (1-6) Prerequisite: consent of the Department and criminal justice agency, and CJUS 1100. Supervised experience in a criminal justice agency. May be repeated for credit up to a maximum of 12 total hours but with no more than six hours counting toward the major. *Pass/No Credit* grading. *(Spring)*

CJUS 3800. Directed Individual Study. (1-4) Prerequisite: junior standing and consent of the Department. Special probelms. May be repeated for credit. *(Spring, Fall)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

CJUS 4000. Topics in Criminal Justice. (1-6) (1-6G) Prerequisite: consent of the Department. Specialized criminal justice topics. May be repeated for credit. *(Fall, Spring)*

CJUS 4200. Problems and Decisions in Criminal Justice. (W) (3) (3G) Prerequisites: junior standing and consent of the Department. Advanced methodological evaluation of criminal justice policy and programs. *(Fall, Spring)*

CJUS 5103. Program Planning and Evaluation in Criminal Justice. (3) (3G) Prerequisite: junior standing and consent of the Department. Applied research will be viewed as the foundation for criminal justice planning; distinctions between basic and applied research will be emphasized. Emphasis will be placed on the theoretical bases of planning in general and criminal justice planning in particular. The role of evaluation as it relates to criminal justice programs will be discussed to assist the student in predicting the success or failure of a project or program. *(Alternate years)*

CJUS 5131. Police Problems and Practices. (3) (3G) Prerequisite: junior standing and consent of the Department. Consideration will be given to the role and function of police on the operational level. Discretionary decision making and the legal, social and institutional contexts in which it occurs are also considered. Application of interpersonal theories and concepts to police problems and practices will be included. *(Alternate years)*

Department of Dance and Theatre

Chairperson: Associate Professor Beasley; *Professor:* Wade; *Associate Professors:* Croghan, Rackley, Sofras, Zimmermann; *Assistant Professors:* Hubbard, Lundrigan, Marrash-Minnerly, Sartin; *Lecturers:* Bloede, Neil, Zuckerman

The Department of Dance and Theatre offers degree programs for majors and courses for non-majors in the areas of dance and theatre. The dance area offers courses in ballet, modern dance and jazz, as well as lecture classes in dance history and dance education. Students interested in theatre may choose courses from the full range of theatre production—acting, directing or design. Traditional lecture classes in theatre history are available, as well as special classes in puppetry. Both areas offer a variety of performance experiences for academic credit, such as theatre productions and dance recitals.

All dance and theatre classes and performances are held in the Rowe Arts Center. The facility contains two theatres, two dance studios and various specialized classroom spaces and faculty offices.

A major in dance or theatre provides the student with a basic education within a liberal arts context, as opposed to highly-specialized conservatory training. Occasionally graduates move directly into the profession as performers, designers or teachers, but more commonly opt for advanced training in graduate programs or apprenticeships with professional organizations. Some majors use their undergraduate experience as a springboard to other areas such as arts management, law school or private business.

BACHELOR OF CREATIVE ARTS (BCA)

Reviews. A committee of at least three faculty members will review with the student the work of each major having less than a 2.5 GPA at the end of the semester during which the student completes his/her 30th credit hour. The purpose of the review is to evaluate the potential of the student in terms of his/her goals in the major field of study. Students who show no evidence of development will be encouraged to alter their goals.

The committee will again review the student's progress near the end of the semester during which he/she expects to complete the 60th credit hour. The committee will determine that the student should continue in the program, that he/she should be withdrawn from BCA degree candidacy, or that he/she must be reviewed again after a year. The Chairperson will inform the student in writing of the committee's recommendation.

DANCE. A major in dance leading to the BCA degree consists of 51 semester hours of dance including six semesters of modern dance, six semesters of ballet, two semesters of jazz, and two semesters of dance history. Majors are also required to take courses in improvisation, ideokinesiology, and creative dance, and to rehearse and perform with the Dance Ensemble during every semester of residence, through their enrollment in Applied Dance.

Teacher certification (K-12) is available in dance. Students seeking certification in addition to the BCA degree should declare this intent to the dance certification liaison person by the first semester of the sophomore year. A later decision to seek certification along with the BCA degree may result in a graduation date delayed by one or more semesters.

THEATRE. A major in theatre leading to the BCA consists of 48 semester hours of theatre including two semesters of acting, two semesters of technical theatre, two semesters of theatre history, one semester of directing, and 15 hours of theatre electives. Theatre majors are required to take six semesters of applied theatre, which involves participation in various aspects of production.

MINORS

DANCE. A minor in dance requires 25 semester hours: 18 hours of studio courses in modern dance, ballet and jazz dance; two hours of applied dance (involvement in dance productions); and three hours of ideokinesiology.

THEATRE. A minor in theatre requires 22 semester hours: six hours in performance electives, six hours in technical theatre electives, six hours in theatre history, and four hours of applied theatre (involvement in theatre productions).

HONORS PROGRAM IN PERFORMING ARTS

The honors program in Performing Arts was developed primarily for majors and is based on individual honors projects.

Admission. Students must have completed a number of course prerequisites and at least 60 semester hours of coursework and have an overall GPA of 3.0 and a 3.5 in Performing Arts coursework. Additionally, honors students must be recommended by the Department Honors Committee to participate in the program.

Courses. The courses offered are "Individual Project, Honors" at both the junior and senior levels.

Certification Requirements. A student must complete 15 hours of honors individual projects, with at least six hours of work at the senior individual level and achieve an overall GPA of 3.5 in all honors coursework completed in the Department.

SUGGESTED SCHEDULE: BCA, DANCE

Freshman Year

DANC 1212 2	DANC 1213 2
DANC 1214 2	DANC 1215 3
DANC 1216 1	DANC 1217 1
DANC 2226 1	DANC 2227 1
DANC 1218 1	ENGL 1102 3
ENGL 1101 3	Foreign Language Proficiency 4
Foreign Language Proficiency 4	Elective 3

Sophomore Year

DANC 1216 0	DANC 1217 0
DANC 2119 3	DANC 2223 2
DANC 2222 2	DANC 2225 3
DANC 2224 3	DANC 2228 2
GOAL II 3	GOAL II 3
GOAL IV 4	GOAL IV 4

Junior Year

DANC 1216 0	DANC 1217 0
DANC 3234 3	DANC 3235 3
DANC 2222 2	DANC 2223 2
DANC 2110 3	DANC 2111 3
GOAL IV 4	GOAL III 3
GOAL I: (W) 3	GOAL I: (W) 3
	Elective 1

Senior Year

DANC 1216 0	DANC 1217 0
DANC 3230 3	GOAL V: (A) 3
GOAL V: (L) 3	GOAL VI: (X) 3
GOAL VI: (C) 3	Electives 9
Electives 6	

SUGGESTED SCHEDULE: BCA, THEATRE

Freshman Year

THEA 1201	3	THEA 1202	3
THEA 1203	3	THEA 1205	3
THEA 1207	2	THEA 1207	2
ENGL 1101	3	ENGL 1102	3
Foreign Language Proficiency	4	Foreign Language Proficiency	4

Sophomore Year

THEA 2101 or 2216	3	THEA 2102 or THEA Elective	3
THEA 1207	2	THEA 1207	2
THEA Elective	3	THEA Elective	3
GOAL II	3	GOAL II	3
GOAL IV	4	GOAL IV	4

Junior Year

THEA 2101 or 2216	3	THEA 2102 or THEA Elective	3
THEA 1207	2	THEA 1207	2
GOAL IV	4	GOAL III	3
GOAL I: (W)	3	GOAL I: (W)	3
Electives	6	Electives	6

Senior Year

THEA Elective	3	THEA Elective	3
GOAL V: (L)	3	GOAL V: (A)	3
GOAL VI: (C)	3	GOAL VI: (X)	3
Electives	7	Electives	6

DANCE (DANC) COURSE DESCRIPTIONS

DANC 1212. Ballet I. (2) Fundamentals of ballet technique, barre and floor work. May be repeated for credit. *(Fall, Spring)*

DANC 1213. Ballet II. (2) Prerequisite: DANC 1212 or consent of instructor. Continuation of DANC 1212. May be repeated for credit. *(Fall, Spring)*

DANC 1214. Modern Dance I. (2) Combination of improvisation, effort-shape, elementary modern styles. May be repeated for credit. Four contact hours. *(Fall, Spring, Summer) (Evenings)*

DANC 1215. Modern Dance II. (3) Prerequisite: DANC 1214, or consent of instructor. Continuation of DANC 1214. May be repeated for credit. Six contact hours. *(Fall, Spring)*

DANC 1216. Applied Dance and Repertory Lab. (1) Prerequisite: dance majors or minors or consent of instructor. Practice and performance of choreography created by faculty and guest artists. May be repeated each semester for credit. Six contact hours. *(Fall, Spring)*

DANC 1218. Dance Improvisation. (1) Exploration of the basic elements of dance through spontaneous group interaction. Two contact hours. *(Fall)*

DACN 2110. History of Dance I. (A) (3) Historical and cultural developments in dance using Louis Horst's Modern Dance Forms. *(Fall) (Alternate years)*

DANC 2110L. History of Dance Laboratory. (1) Corequisite: DANC 2110. Laboratory to teach the cultural influences affecting the development of dance in the 20th century through the creation/composition of dances. (Two contact hours) *(Fall)*

DANC 2111. History of Dance II. (A) (3) Historical and cultural developments in dance using Horst's Pre-Classic Dance Forms. *(Spring) (Alternate years)*

DANC 2111L. History of Dance Laboratory II. (1) Corequisite DANC 2111. Laboratory to teach dance composition by learning the structure, form and rhythm of pre-classic dances. (Two contact hours.) *(Spring) (Alternate years)*

DANC 2119. Ideokinesiology. (3) Prerequisite: DANC 1215. Concentration on visual and tactile aids as well as imagery for teaching dance and body re-education. Two lecture hours, two lab hours. *(Spring)*

DANC 2120. Dance Education Methods I. (3) Prerequisites: DANC 1215 or consent of instructor. Creative movement theories; techniques and skills for teaching the elementary school child. Three lecture hours, one lab hour. *(Fall) (Alternate years)*

DANC 2121. Dance Education Methods II. (3) Prerequisite: DANC 1215 or consent of instructor. Experiences in techniques for teaching dance in secondary schools. Three lecture hours, one lab hour. *(Spring) (Alternate years)*

DANC 2222. Ballet III. (2) Prerequisite: DANC 1213 or consent of instructor. Intermediate ballet; barre and centerwork. May be repeated for credit. Four contact hours. *(Fall)*

DANC 2223. Ballet IV. (2) Prerequisite: DANC 2222 or consent of instructor. A continuation of DANC 2222. May be repeated for credit. Four contact hours. *(Spring)*

DANC 2224. Modern Dance III. (3) Intermediate modern dance technique. May be repeated for credit. Six contact hours. *(Fall) (Alternate years)*

DANC 2225. Modern Dance IV. (3) Prerequisite: DANC 1215. A continuation of DANC 2224. May be repeated for credit. Six contact hours. *(Spring) (Alternate years)*

DANC 2226. Jazz Dance I. (1) Fundamentals of jazz dance technique. May be repeated for credit. Two contact hours. *(Fall, Spring)*

DANC 2227. Jazz Dance II. (1) Expansion of DANC 2226. May be repeated for credit. Two contact hours. *(Fall, Spring)*

DANC 2228. Creative Dance Experience. (2) Prerequisite: DANC 1215. Exploration of basic dance elements: space, time, energy, and design. Majors only. Four contact hours. *(Spring)*

DANC 2601. Sophomore Individual Project. (2) Project designed by the student with the assistance of the adviser. Majors only. Three contact hours. *(Fall, Spring)*

DANC 3001. Topics in Dance. (1-3) Special topic in dance. May be repeated for credit with change in topic. Two to six contact hours. *(On demand)*

DANC 3110. Dance Criticism. (W) (3) Critical analysis of 20th century dance forms are used as a basis for discussion and written commentary. (Spring)

DANC 3226. The Origins of Jazz Dance. (1) Traces (primarily through movement) the evolution of jazz dance from the late 1800's through the 1940's. *(Fall) (Alternate years)*

DANC 3230. Choreography. (3) Prerequisites: DANC 2110, 2111, 2228. Methods and sources of dance composition. Six contact hours. *(Fall) (Alternate years)*

DANC 3234. Modern Dance V. (3) Prerequisite: DANC 2225. Dance technique at an intermediate advanced level. May be repeated for credit. Six contact hours. *(Fall) (Alternate years)*

DANC 3235. Modern Dance VI. (3) Prerequisite: DANC 2225. Continuation of DANC 3234. May be repeated for credit. Six contact hours. *(Spring) (Alternate years)*

DANC 3479. Student Teaching in Dance. (12) Prerequisite: Senior standing in the teacher certification track of the BCA dance degree program. A 15-week practicum in the teaching of dance at the elementary and/or secondary levels. Includes a weekly seminar. Three contact hours weekly, plus the semester-long practice teaching experience. *(Fall, Spring)*

DANC 3601. Junior Individual Project I. (3) Prerequisite: DANC 2601. Majors only. *(Fall)*

DANC 3602. Junior Individual Project II. (3) Prerequisite: DANC 3601. Majors only. *(Spring)*

DANC 3691. Senior Individual Project I. (6) Prerequisite: DANC 3602. Majors only. *(Fall)*

DANC 3692. Senior Individual Project II. (6) Prerequisite: DANC 3691. Majors only. *(Spring)*

THEATRE (THEA) COURSE DESCRIPTIONS

THEA 1101. Introduction to Theatre. (A) (3) Survey and analysis of the elements that make up the theatrical event. *(Fall, Spring)*

THEA 1102. Creative Drama. (3) Drama and theatre as teaching tools to achieve educational ends in any subject in the classroom. *(Fall, Spring)*

THEA 1103. Acting for Non-Theatre Majors. (3) Introduction to the nature of acting for the stage. Study and practice of acting principles, including voice development, movement, and the use of the imagination. (This course may not be used as a prerequisite for THEA 1202, Acting II.) *(Fall, Spring)*

THEA 1109. Preliminary Experience in Student Teaching. (1) Prerequisite: THEA 1102. Obervation of certified theatre arts teachers on both the primary and secondary school levels. Some participation in class activities will be required. *(Fall) (Alternate Years)*

THEA 1201. Acting I: Fundamentals of Acting. (3) Introduction to acting derived primarily from an in-depth investigation of improvisation. Six contact hours. *(Fall)*

THEA 1202. Acting II: Voice and Movement. (3) Prerequisite: THEA 1201. Basic skills of breathing, projection, articulation, dialects, IPA, alignment, centering, and combat. Six contact hours. *(Spring)*

THEA 1203. Stagecraft I. (3) Construction and painting skills with some attention to basic elements of theatrical design. Crew hours required in addition to three contact hours. *(Fall, Spring)*

THEA 1204. Stagecraft II. (3) Expansion of THEA 1203. *(On demand)*

THEA 1205. Introduction to Costuming Techniques. (3) Introduction to costume shop equipment, sewing techniques, basic patterning and construction of costume accessories. *(Fall, Spring)*

THEA 1206. Theatrical Make-Up. (3) Modeling of the face as well as special clown, character and unusual make-up. *(Spring)*

THEA 1207. Applied Theatre. (1-2) Practical production experience with the UNCC Theatre Ensemble. May be repeated for credit. *(Fall, Spring)*

THEA 2101. Theatre History I. (A) (3) Theatre history from pre-classical periods to the seventeenth century. *(Fall) (Alternate years)*

THEA 2102. Theatre History II. (A) (3) Seventeenth century to the present. *(Spring) (Alternate years)*

THEA 2103. Costume Design. (3) Costume design theory and history. *(Fall)*

THEA 2201. Acting III. (3) Processes of character development based largely on the theories of Stanislavsky. Six contact hours. *(Fall)*

THEA 2202. Acting IV: Advanced Acting. (3) Prerequisite: THEA 2201. Systematic approaches to acting not covered in THEA 2201. May be repeated for credit with change of approach. Six contact hours. *(Spring)*

THEA 2203. Scene Study. (3) Prerequisite: THEA 1202. Actor's Workshop dealing with the analysis, rehearsal and performance of scenes and one-act plays. May be repeated for credit. Six contact hours. *(Fall) (Alternate years)*

THEA 2204. Musical Theatre Performance Techniques. (3) Prerequisite: THEA 1202. Actor's Workshop dealing with special skills required for the performance of musical theatre. Six contact hours. *(Fall) (Alternate years)*

THEA 2205. Scene Design I. (3) Survey of the elements of scene design. *(Fall)*

THEA 2206. Scene Design II. (3) Model building. *(Spring)*

THEA 2207. Puppetry. (3) Types of puppets and the history of puppetry with emphasis on basic puppetry construction and production problems. *(Fall, Spring) (Evenings)*

THEA 2212. Stage Lighting. (3) Mechanics of electricity, light, lenses and control systems. *(Spring)*

THEA 2213. Stage Properties. (3) Survey of hand, set, and dress properties with emphasis on design and production techniques. *(Spring)*

THEA 2214. Scene Painting. (3) Scene painting techniques, using primarily water media. *(Fall)*

THEA 2215. Advanced Costume Problems. (3) Draping and drafting of costume fitting and layout techniques, masks and millinery finishing methods. *(Spring)*

THEA 2216. Play Directing I. (3) Principles and techniques of play directing including analyzing texts, staging, and communication with actors. *(Fall)*

THEA 2217. Play Directing II. (3) Prerequisite: THEA 2216. Continuation of THEA 2216, with emphasis on advanced analysis, coaching, communication with designers, and complex staging problems. *(Spring) (Alternate years)*

THEA 2218. Playwriting I. (W) (3) Writing scenes and performing dramatic readings of fellow writers' scenes. A number of plays will be analyzed. *(On demand)*

THEA 2219. Playwriting II. (W) (3) Prerequisite: THEA 2218. Structure and techniques of writing longer works and of rewriting. Continuation of play analysis. *(On demand)*

THEA 2409. Practicum in Creative Drama: K-8. (3) Prerequisite: THEA 1102. Study and application of advanced theories, concepts, competencies and processes unique to primary and middle school settings, with particular attention to the various subject areas. Centered on in-school teaching experience. *(Spring) (Alternate Years)*

THEA 2410. Practicum in Secondary School Play Production: 9-12. (3) Prerequisite: THEA 1102. Study and application of advanced theories, concepts, competencies and processes in theatre arts for teaching the specialized areas of production and performance in a secondary school setting (9-12). *(Fall) (Alternate Years)*

THEA 2411. Practicum in Theatre Management. (3) Prerequisite: THEA 1207 and 1210. A survey of the principles and practices of theatre management skills including, but not limited to stage management, box office management, publicity, promotion and graphic art concepts. *(Spring) (Alternate Years)*

THEA 2601. Sophomore Individual Project. (2) Project designed by the student with the assistance of the adviser. Majors only. *(Fall, Spring)*

THEA 3001. Topics in Theatre. (1-6) Special topic in theatre. May be repeated for credit with change of topic. *(On demand)*

THEA 3220. Methods of Facilitating Learning in Theatre Arts. (3) Prerequisites: THEA 1109, 2209, 2210 *and* EDUC 2100. Exploration of pedagogical methodologies in theatre arts and the application of theory to the classroom setting. Includes instructional planning and review of state mandated goals, objectives, measures and competencies for theatre arts classes. *(Spring) (Alternate Years)*

THEA 3479. Student Teaching in Theatre Arts. (12) Prerequisite: THEA 3220, senior status, completion of all other certification coursework and permission of certification director. In-class teaching experience: eight weeks in primary and eight weeks in secondary school settings. *(Fall, Spring)*

THEA 3601. Junior Individual Project I. (3) Prerequisite: THEA 2601. Majors only. *(Fall)*

THEA 3602. Junior Individual Project II. (3) Prerequisite: THEA 3601. Majors only. *(Spring)*

THEA 3691. Senior Individual Project I. (6) Prerequisite: THEA 3602. Majors only. *(Fall)*

THEA 3692. Senior Individual Project II. (6) Prerequisite: THEA 3691. Majors only. *(Spring)*

Department of English

Interim Chairperson: Associate Professor Jacoby; *Professors:* B. Davis, McGavran, Moss, Smith, Varnas, Watson; *Associate Professors:* Amante, Frazier, Gatlin, Govan, R. Grey, Harper, McNair, Shapiro, West; *Assistant Professors:* Bosley, Davenport, C. Davis, Gardner, Hemley, Morgan, Patten, Shealy, Thiede, Yancey; *Lecturers:* Fenyves, Fox, L. Grey, McLaurin, Rothwell, Sloan; *Emeritus Professors:* Burne, Carver, Ellis, Mason, Moose

A major in English is good preparation for a career in which good communication, a knowledge of people, an awareness of ideas, or clear thinking is important. Of course, in most careers one or more of these abilities is important. Education, law, journalism, medicine and library science are fields traditionally associated with the English major. More and more, however, persons with

proficiency in writing, language and literature find increased opportunities in such fields as government, business, banking, museum work, advertising, public relations, sales, publications, printing, radio and television.

By pursuing a double major, students can combine English with political science, business, the arts, history, criminal justice and other majors. These combinations can be satisfying to the student as well as attractive to potential employers.

Graduate school is a possiblity after completing the B.A. degree. The English Department offers a Master of Arts degree program (see *The Graduate School* section of this *Catalog),* designed to accommodate students seeking the M.A. with or without graduate certification in teaching.

Students who do not major in English but wish to take courses in English, for pleasure or in order to build their skills with language, shsould consult the Department about the possibility of minoring in English, Journalism or Communication Studies. (See pages 98-100 for information regarding the Communication Studies Program.)

BACHELOR OF ARTS

A major in English leading to the B.A. degree consists of 30 semester hours of coursework in English beyond that used to meet the general education requirement of six hours in English (usually 1101 and 1102). English 2100 is required, and a maximum of six hours of additional 2000-level English courses *may* be used toward the English major. (Prerequisites for courses at the 2000 level and above are English 1101 and 1102, or the equivalent; 1102 may be taken concurrently with a 2000-level course with the consent of the Department.) Requirements above the 2000 level are as follows: at least three hours of English in *each* of the three Group-A categories (pre-1800 British literature; post-1800 British literature; and American literature) and at least three hours in *each* of the five Group-B categories (literary history; genre or mode; major figure; writing; and language). Lists of which courses fit the seven categories will be given to each student who enters the English major and also will be available from English Department advisers and the English Department main office. A single course may be used to satisfy two categories only if one of the two categories comes from Group A and one from Group B. It is recommended that students take a 2000-level English course (for majors, preferably English 2100) prior to enrolling in 3000- or 4000-level literature courses.

The English major also requires nine semester hours of related work beyond the required 30 hours of English and in addition to the work used for the general education requirements. The purpose of the related work is to make connections between the English major and other humanistic studies. Required are: Communication Studies 1101, plus six hours at the 2000 level or above in Performing Arts, Visual Arts, American Studies, Afro-American and African Studies, Philosophy, Humanities, Communication Studies, Foreign Languages, History, Religious Studies, and/or Women's Studies 3101, and/or Arts and Sciences 3400. (The six hours do not have to be from only one department.) Courses from academic areas other than these may be used for the related work requirement, but only with the approval of the Chairperson of the English Department. Students with a second major or minor in another department shall be considered automatically to have satisfied the six hours of related work beyond COMM 1101.

Note: Whenever a student is admitted to the English major, that status is conditional upon: making at least a *C* average for the first nine hours of English taken at UNCC; and upon making at least a *C* average on the papers written for those courses considered together. If the student has the *C* average on courses but not on papers, he or she may take further work in composition and may qualify fully for the English major if the composition instructor approves. If the above standards are met, the student will be admitted to full status in the English major.

If the grade point average in English courses falls below 2.0 at any time or composition falls below average, there should be a conference between the student and the adviser about continuing to major in English.

Internships. Internships in the community and at The University are available for upper-level English majors, and Communication Studies minors. See Arts and Sciences 3400 and consult the English Department for further information.

English Department Class Attendance Policy. Students are expected to attend all scheduled English Department classes. Specific attendance policy for each section is left to the teacher.

Awards. The Department gives several undergraduate awards each spring (usually to senior English majors): the Margaret Bryan Award for excellence in scholarship; the Intimate Bookshop Creative Writing Awards; the Aristidis Katopodis Award for academic excellence in the study of English; and the Robert M. Wallace Award for excellence in the study of English. Also, each spring the Department awards the Goudes Scholarship to a rising senior English major, for academic excellence and financial need.

ENGLISH MINOR

A minor in English consists of 18 hours in English courses at the 2000 level or above. Students must take ENGL 2100 and must elect a minimum of nine hours of coursework numbered 3000 or above to complete the minor. A GPA of 2.0 in all English courses is required.

JOURNALISM MINOR

The minor in journalism is offered by the English Department to provide an introduction to journalism areas such as writing, editing, feature writing, layout and design, and related communication and media issues. It is designed for students who have completed ENGL 1101 and 1102. The minor consists of 18 hours of coursework including:

JOUR 2160 Introduction to Journalism, JOUR 3160 News Writing and JOUR 3161 News Editing.

The nine (9) hours of elective coursework needed to complete the minor may be chosen from:

ENGL 4204 Expository Writing (3)
JOUR 3162 (formerly ENGL 3162) Feature Writing (3)
or other journalism topics courses offered by the English Department.
ARTS 2235 Photography I (3)
ARTS 3250 Visual Communication and Design I (3)
ARTS 3251 Visual Communication and Design II (3)
or an equivalent layout course
COMM 3120 Communication and the Mass Media
POLS 3103 Public Opinion and the Mass Media
POLS 3104 Politics and the Mass Media

Note: Students may count JOUR 3160, 3161, and 3162 toward the major in English **or** toward the minor in Journalism; students may *not* count the same courses toward both.

TEACHER CERTIFICATION IN ENGLISH

Students seeking **secondary certification** must meet all the requirements of the English major. Such students should consult with their adviser in the College of Education and Allied Professions regarding education courses required for certification.

Student Teaching. Additional requirements that must be met before students are allowed to do student teaching include: at least a 2.75 GPA for English courses above the 1000 level taken at UNCC and at least a 2.75 GPA for all courses taken at UNCC; submission of a writing sample; and, in addition to ENGL 2100, at least 24 hours of work in English above the 1000 level. *Students should consult the Department early in their careers regarding these requirements.*

ENGLISH (ENGL) COURSE DESCRIPTIONS

ENGL 1100. English As A Foreign Language. (3) Limited to students whose native language is not English who may need additional preparation for their regular academic work, primarily composition. Does not count toward an English major nor toward the general education requirement. One may not register for ENGL 1100 before taking the English Department's placement test for persons whose primary language is not English. *(Fall, Spring)*

ENGL 1101. English Composition. (3) Extensive practice in and discussion of composition in various forms, for different purposes, and for various audiences. Students experience writing as a means of personal growth, intellectual development, and communication. *(Fall, Spring, Summer) (Evenings)*

ENGL 1102. Composition and Literature. (3) Prerequisite: ENGL 1101. Combined practice in writing and the study of literature. Students become more independent and competent writers, more acute thinkers, and more critical readers of at least two genres of literature. *(Fall, Spring, Summer) (Evenings)*

ENGL 1101 and 1102 are prerequisites for all other English courses.

ENGL 2014. Topics in Writing. (W) (1-3) Offers instruction and practice in special types of writing, such as research or legal writing, which are not included in other writing courses. In addition, some sections may be designed for students who need strengthening of composition skills, or may offer instruction in various aspects of effective writing. English 2014 *may not be used* toward the requirements for the English major. The *maximum hours of credit* allowed are six for English 2014 or 2015, or for 2014 and 2015 together. *(On demand)*

ENGL 2015. Topics in Writing. (W) (1-3) Offers instruction and practice in special types of writing, such as writing for publication (exclusive of poetry, drama and fiction), which are not included in other writing courses. In addition, some sections may offer instruction in various aspects of effective writing. *Not more than* three hours of 2015 may be used toward the requirements for the English major (and those three hours may not be used toward fulfillment of the 12 hours of English language or composition required for certification in English). The *maximum hours of credit* allowed for any student are six for English 2015 or 2014, or for 2015 and 2014 together. *(On demand)*

ENGL 2050. Topics in English. (3) Designed to offer topics of general interest not included in other courses. May be repeated for additional credit with the approval of the English Department. Does not count toward the English major. *(Yearly)*

ENGL 2090. Topics in English. (3) Designed to offer topics of general interest not included in other courses. May be repeated for additional credit with the approval of the English Department. May count toward the English major. *(On demand)*

ENGL 2100. Approaches to Literature. (3) Introductory study and application of major critical approaches to literature, such as historical, psychological, mythological and formalistic. *Required of English majors* and highly recommended as the first post freshman-level course for the English major. *(Fall, Spring)*

ENGL 2101. Masterpieces of British Literature I. (LC) (3) An introduction to British Literature written before 1800, the course also provides backgrounds in the society and culture of the Middle Ages, the Renaissance, and the Age of Reason. *(Fall)*

ENGL 2102. Masterpieces of British Literature II. (LC) (3) An introduction to masterpieces of British Literature written since 1800, the course also provides backgrounds in the society and culture of the Romantic, Victorian and Modern periods. *(Spring)*

ENGL 2103. Masterpieces of Modern Fiction. (L) (3) Readings in selected novels and short stories written since 1850. *(Fall, Spring, Summer) (Evenings)*

ENGL 2104. Major American Writers. (L) (3) Introductory readings in six to eight authors, approximately half from the 19th century and half from the 20th century, both poetry and prose. *(Yearly)*

ENGL 2105. Introduction to Poetry. (WL) (3) Representative poems and poets, drawn from several literary periods that introduce students to several poetic genres, to varied treatments of universal themes (such as love, death, disappointment, joy) and to various ideas about poetic imaginations. *(Yearly)*

ENGL 2106. Film Criticism. (A) (4) Introduction to film as an art form. Emphasis will be on critical theory and on critical analysis of the form and the content of different kinds of films—e.g., the narrative film, the silent film, the documentary film, etc.—drawn from the international cinema. Students will apply critical theory to the analysis of professionally made films and will have the option of making their own short films. A viewing lab is required. *(Fall, Spring)*

ENGL 2108. Introduction to Drama. (3) Representative plays of the western world from the classical period to the modern period to introduce students to drama as literature, with consideration of staging, conventions of the theatre, types of drama, and dramatic theory. *(Alternate years)*

ENGL 2111. Masterpieces of World Literature I. (LX) (3) Readings in Greek, Latin, and Eastern poetry and prose, in translation into English. The genesis of literature in myth, in Eastern religion, and in the Bible, and the development of Greek and Roman literature. *(Fall)*

ENGL 2112. Masterpieces of World Literature II. (LX) (3) Readings in Medieval, Renaissance and Modern European literature, in translation into English. Social and literary changes in the Reformation and Renaissance, the beginnings of new modes of thought in the Age of Enlightenment, and other scientific, literary, religious, philosophical and social changes up to the modern period. *(Spring)*

ENGL 2116. Introduction to Technical Communication. (W) (3) Technical Communication theory (such as organization, audience analysis, and editing) is taught in the context of oral and written formats, such as memoranda, proposals, and reports, and includes formats and content common to students' own disciplines. For general elective credit only. *(Fall, Spring)*

ENGL 2126. Introduction to Creative Writing. (W) (3) This course introduces students to creative writing, including both poetry and fiction writing, assuming little or no previous creative writing experience. *(Fall, Spring)*

ENGL 2132. Introduction to Contemporary American English. (3) An introduction to the study of the sound system and structure of contemporary American English, including characteristics and applications of traditional grammar. *(On demand)*

ENGL 3050. Topics in English. (3) Special topics not included in other courses. May be repeated for additional credit with approval of the English Department. *(Fall, Spring)*

ENGL 3090. Major Authors. (3) The works, ideas and life of one to three significant authors. With permission of the English Department, may be repeated once for credit as long as the figures treated differ. *(Fall, Spring)*

ENGL 3103. Children's Literature. (L) (3) Critical and historical study of children's literature, including picture books, poetry, myth, fable, folk tale, fantasy, and realistic fiction. Central to the course is development of critical principles for assessing the literary merit of children's books. Other possible emphases: the creative process; archetypes and values in the works studied; images of childhood; children's responses to literature; and issues in children's book selection.* *(Fall, Spring)*

ENGL 3104. Literature for Adolescents. (L) (3) Introduction to literature for adolescents. Emphases are: (1) critical analysis and aesthetic judgment of literature; (2) study of representative examples from all major genres (poetry, fiction and drama) as well as various subgenres (such as biography, science fiction, fantasy, and contemporary realistic juvenile fiction) which address the cognitive, emotional and psychological needs of junior high and high school students. Students will practice applying these approaches to adolescent literature and will employ these concepts in critically selecting, evaluating and judging books for adolescents.* *(Yearly)*

ENGL 3110. Literature and Science. (WV) (3) Prerequisites: ENGL 1101 and 1102. The works of scientists (such as Darwin, Freud, or Einstein) and their influence on literature studied along with the role of creativity, imagination, and communication in literature and science. *(Alternate years)*

ENGL 3113. Milton. (3) A study of the major poems and selections from the minor works of Milton. *(Alternate years)*

ENGL 3116. Shakespeare's Early Plays. (3) A study of 10 representative plays from the comedies, histories and tragedies written 1590-1600. *(Fall, Spring)*

ENGL 3117. Shakespeare's Late Plays. (3) A study of 10 representative plays from the period 1600-1611, including the late tragedies and tragi-comedies. *(Fall, Spring)*

ENGL 3123. Wit and Sensibility: 18th-Century British Literature. (3) Poetry and prose in the golden age of satire, with emphasis on Dryden, Pope, Swift and Johnson. Early Romantic trends in the poetry of Young, Grey, and Collins. *(Alternate years)*

ENGL 3125. The Romantic Era, 1785-1832. (3) The development of the Romantic movement, with emphasis on the works of Wordsworth, Coleridge and other major poets. *(Yearly)*

ENGL 3126. The Victorian Era to 1870. (3) Readings in British literature of the middle of the 19th century, reflecting such cultural developments as the rise of industrialism and technology, England's global empire, the rapidly changing nature of society, the religious crisis, and the beginnings of artistic and literary revolt against the establishment. *(Yearly)*

ENGL 3127. British Literature from 1870 to World War I. (3) Readings emphasizing such cultural and literary developments as realism and the impact of science, art for art's sake, problems of religious faith and of sexuality, moral and political issues relating to colonialism, British imperialism, and new techniques in art and literature. *(Yearly)*

**At least one of these courses is required for English majors seeking intermediate teacher certification.*

ENGL 3128. British Literature Since World War I. (3) Readings reflecting developments such as the decline of Britain as a world power, the intellectual disillusionment following World War I, the impact of psychological and social theory, and literary innovation and experimentation. *(Alternate years)*

ENGL 3141. American Literature of the Romantic Period, 1820-1870. (3) Important writers and ideas of the period of American romanticism, from Irving through Whitman, including such authors as Poe, Emerson, Thoreau, Hawthorne, Melville. *(Yearly)*

ENGL 3142. American Literature of the Realistic and Naturalistic Periods, 1870-1920. (3) Important writers and ideas of American literature from Whitman through the period of World War I, including such authors as Dickinson, Twain, Howells, James, Crane, Dreiser, Frost. *(Yearly)*

ENGL 3143. Modern American Literature, 1920 to Present. (3) Important writers and ideas of modern American literature, including such authors as Faulkner, Eliot, Hemingway, Cummings. *(Yearly)*

ENGL 3144. The American Novel of the 19th Century. (3) Major novelists and traditions from the beginnings of the American novel through the rise of realism, including such novelists as Hawthorne, Melville, Twain, Howells, James. *(Alternate years)*

ENGL 3145. The American Novel of the 20th Century. (3) Major novelists and traditions from the emergence of naturalism to the present, including such novelists as Crane, Dreiser, Hemingway, Faulkner. *(Yearly)*

ENGL 3146. Contemporary Jewish-American Literature. (X) (3) An introduction to the scope and shape of the contemporary Jewish-American literary tradition. Such writers as Bellow, Malamud, Roth, Singer, and Potok will be studied. *(Alternate years)*

ENGL 3147. Early Black American Literature. (3) A survey of significant writings by black Americans before the Harlem Renaissance. *(Alternate years)*

ENGL 3148. Twentieth-Century Black American Literature: Prose. (3) Intensive study of selected black American 20th-century writers of fiction and nonfiction, beginning with the Harlem Renaissance. *(Alternate years)*

ENGL 3149. Twentieth-Century Black American Literature: Poetry and Drama. (3) Intensive study of selected black American 20th-century writers of poetry and drama, beginning with the Harlem Renaissance and including the Black Arts Movement. *(Alternate years)*

ENGL 3155. American Folklore. (3) Introduction to the nature of folklore. Emphasis on literary folklore, including myths, legends, ballads, songs, tall tales, hero tales and ghost stories. (Does not satisfy the American literature requirement for English majors.) *(Alternate years)*

ENGL 3156. American Indian Literature. (3) Survey of American Indian literature, ranging from the oral tradition to the poems and novels of contemporary writers including such writers as N. Scott Momaday, James Welch, and Leslie M. Silko. *(On demand)*

ENGL 3210. Aging in Literature. (3) Exploration of how writers of various genres in various countries and times have portrayed and responded to the human aging process. *(On demand)*

ENGL 3761. Junior Honors Topics I. (3) Prerequisite: permission of the English Department Honors Committee. Literary exploration of timeless issues faced by the individual through the ages. Readings from several genres and several literary periods. *(Fall, Spring)*

ENGL 3762. Junior Honors Topics II. (3) Prerequisites: ENGL 3761 or permission of the English Department Honors Committee. Literary explorations of the effects of society upon the individual. Readings from several genres and several literary periods. *(Spring)*

ENGL 3771. Senior Honors Seminar. (3) Prerequisites: ENGL 3762 or permission of the English Department Honors Committee. Critical study of a single literary mode or genre. *(Fall)*

ENGL 3772. Senior Honors Colloquium. (3) Prerequisite: ENGL 3771 or permission of the English Department Honors Committee. Ideas and their communication, through an intensive study of an author, a movement, or an artistic form. Individual research leading to a significant paper to be shared with the class. *(Spring)*

ENGL 3852. Independent Study. (1-3) Prerequisite: consent of the Department. Individual investigations and appropriate exposition of the results. (Unless special permission is granted by the Department Chair, no more than six hours of 3852 may apply toward the English major.) May be repeated for additional credit with approval of the English Department. *(Fall, Spring, Summer)*

Courses for Undergraduates and Graduate Students

Additional work required for students receiving graduate credit. Departmental permission also required for graduate students to repeat any of the following courses taken previously for undergraduate credit.

ENGL 4002. Women and Literature. (3) (3G) Selected topics focusing on women and literature, such as images of women, women as writers, and women as literary critics. With permission of the English Department, may be repeated for credit as topics vary. (However, only six hours may be used for the requirements for the English major.) *(Yearly)*

ENGL 4008. Topics in Advanced Technical Communication. (3) (3G) Prerequisites: ENGL 2116 and COMM 1101 or equivalents. Exploration, both theoretically and practically, of the interrelation of written, oral and graphic communication within technical rhetorical contexts. May be repeated once for additional credit with the approval of the English Department. *(On demand)*

ENGL 4112. Medieval British Literature. (3) (3G) Representative works (excluding those of Chaucer) written in Britain during the Middle Ages, especially the epic and romance, mainly studied as reflections of the medieval individual's relationship to God, society and other individuals. An introduction to the earliest British literature as it evolved from pagan folklore under the influence of myth, fantasy, courtly convention, the new religion, foreign invasion, and transformations in language and culture. Most of the works studied in this course will be translated into modern English. *(On demand)*

ENGL 4113. British Prose and Poetry of the 16th Century. (3) (3G) Major works of the Renaissance "Golden Age," including Sidney, Marlowe, Shakespeare (excluding drama). Included are satire, the pastoral romance in prose, and the many new poetic forms that continue to the present day, such as the sonnet and blank verse. *(On demand)*

ENGL 4121. The 18th-Century British Novel: Man, Woman, Manners and Morals. (3) (3G) The novel as narrative form and as mirror of the individual in society. Emphasis on fiction by Defoe, Richardson, Fielding, Sterne, Austen, with further readings in the novel of manners and the Gothic romance. *(Alternate years)*

ENGL 4122. The Victorian Novel. (3) (3G) Readings in British fiction during the triumph of the novel in the 19th century, emphasizing major developments in realism, romance, naturalism. *(Alternate years)*

ENGL 4123. The Modern British Novel. (3) (3G) Representative British novels that embody the cultural and literary developments of the 20th century: the impact of two world wars, the influence of important psychological and economic factors of modern life and their relationships to new techniques in art and literature. *(Alternate years)*

ENGL 4124. Modern Irish Literature. (3) (3G) Readings in Irish literature since 1885, with consideration of the mythology, folklore, and social history of Ireland as they are expressed in poetry, drama and fiction. *(Yearly)*

ENGL 4131. British Drama to 1600, Excluding Shakespeare. (3) (3G) A survey of the development of British drama to 1600, with representative plays from the Mystery-Miracle Cycles, the Morality Plays, and Tudor drama, including Lyly, Kyd, Marlowe, Peele, Greene, Dekker. *(On demand)*

ENGL 4132. British Drama from 1600-1642, Excluding Shakespeare. (3) (3G) A survey of Jacobean and Caroline drama, including plays by Jonson, Beaumont and Fletcher, Webster, Middleton, Shirley, Ford. *(Alternate years)*

ENGL 4133. British Drama of Wit and Intrigue, 1660-1780. (3) (3G) The famous bawdy comedy of manners and the heroic drama of the Restoration, followed by the sentimental comedy and satiric burlesque of the 18th century. *(Alternate years)*

ENGL 4141. Colonial and Early American Literature. (3) (3G) Origins of American literature, from Colonial times to Washington Irving, including such authors as Edwards, Taylor, Franklin, Crevecoeur, Freneau, Brown. *(Alternate years)*

ENGL 4145. Literature of the American South. (3) (3G) Selected works of Southern writers which reflect literary and cultural concerns from Colonial times to the present, including such authors as Poe, the early humorists, local color writers, Chopin, Faulkner, Warren, O'Connor, Welty. *(Yearly)*

ENGL 4150. Contemporary Poetry. (3) (3G) Poetry in English (including translations) since 1940. *(On demand)*

ENGL 4151. Modern Drama. (3) (3G) Representative Continental, British, and American plays, from Shaw to the present. *(Alternate years)*

ENGL 4152. Modern European Literature. (3) (3G) Selected modern European authors, translated into English, whose works have been of special interest to readers and writers of British and American literature. *(Alternate years)*

ENGL 4153. Contemporary Fiction. (3) (3G) Selected present-day fiction, with an emphasis upon works from outside the United States and Britain. Works not originally in English will be studied in translation. *(Alternate years)*

ENGL 4155. Pan-African Literature. (3) (3G) Introduction to significant Pan-African literature, emphasizing the oral tradition, selected works of major authors in the Caribbean and Africa, and the relationships of these traditions to American, British and other literary traditions. Works not originally written in English will be studied in translation. *(On demand)*

ENGL 4161. Modern English Grammar. (3) (3G) A study of the structure of contemporary English, with an emphasis on descriptive approaches. *(Yearly)*

ENGL 4165. Language and Culture. (3) (3G) Readings in and discussion and application of the interrelationships between language and culture, including basic introduction to contemporary American dialects and to social contexts of language. *(Yearly)*

ENGL 4166. Comparative Language Studies for Teachers. (3) (3G) Prerequisite: ENGL 2132, or ENGL 6161, or permission of the Department. An introductory course designed to aid the teacher of English as a Second Language in comparing the systems of sound and structure of another language with those systems in English. *(Yearly)*

ENGL 4170. Approaches to Teaching English. (1-3) (1-3G) This course presents various approaches to the teaching of English, including recent theories and research related to literary study. Designed primarily for teaching in grades 7-12. *(Yearly)*

ENGL 4199. Bibliography and Methodology. (3) (3G) Introduction to the scope, aims, materials and methods of literary scholarship, including criticism. *(On demand)*

ENGL 4202. Writing Poetry. (W) (3) (3G) Prerequisite: ENGL 2126, or graduate student status, or permission of instructor. Further study of and practice in the writing of poetry within a workshop format. *(Fall, Spring) (Evenings)*

ENGL 4203. Writing Fiction. (3) (3G) Prerequisite: ENGL 2126, or graduate student status, or permission of instructor. This course provides further study of and practice in the writing of fiction within a workshop format. *(Fall, Spring) (Evenings)*

ENGL 4204. Expository Writing. (W) (3) (3G) Writing of essays, criticism and various forms of exposition. *(Fall, Spring) (Evenings)*

ENGL 4205. Advanced Expository Writing. (3) (3G) Prerequisite: ENGL 4204. May be repeated once for credit with permission of the English Department. *(Alternate years)*

ENGL 4207. Writing Workshop. (3) (3G) Prerequisite: ENGL 4202, 4203, or permission of instructor. May be repeated once for credit with the consent of the English Department. *(Fall, Spring) (Evenings)*

ENGL 4210. Greek and Roman Drama In Translation. (3) (3G) A study of selected plays of Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca with emphasis on dramaturgy and the development of the Greek and Roman theater. *(On demand)*

ENGL 4211. Chaucer. (3) (3G) The poetry of Geoffrey Chaucer, including *The Canterbury Tales* and *Troilus and Criseyde. (Alternate years)*

ENGL 4221. The Earlier 17th Century. (3) (3G) Major writers from Bacon and Donne to the Restoration. *(On demand)*

ENGL 4251. Literary Criticism Through Arnold. (3) (3G) The major schools and critics of literary criticism. *(On demand)*

ENGL 4252. Modern Literary Criticism. (3) (3G) Theories of the modern schools of criticism. *(On demand)*

ENGL 4260. History of the English Language. (3) (3G) Origins and development of the English language, both spoken and written, from its earliest forms to contemporary usage. *(Yearly)*

ENGL 4263. Linguistics and Language Learning. (3) (3G) Readings in, discussions of, and application of linguistically oriented theories of language acquisition, directed toward gaining an understanding of language-learning processes and stages. *(Alternate years)*

ENGL 4290. Advanced Creative Project. (3) (3G) Prerequisite: ENGL 4207 or its equivalent, or permission of the instructor. The planning, writing, and polishing of a work of at least 20 pages of poetry or at least 40 pages of fiction or creative non-fiction by an advanced undergraduate or graduate students with the guidance of a member of the Department's creative writing faculty. The final work may be a single piece or a collection of pieces and will evolve under the supervision of the primary instructor. With permission of the Department, students who took the course as undergraduates may repeat as graduate students. *(On Demand)*

ENGL 4400. English Composition Practicum. (1-3) (1-3G) Prerequisite: consent of the instructor. Through supervised tutorial experience and seminars, this course introduces the student to current developments concerning composition and to a variety of methods for teaching English composition. This course is highly recommended for those planning to teach or those currently engaged in teaching. With permission of the English Department may be repeated once for credit. *(Fall, Spring)*

JOURNALISM (JOUR) COURSE DESCRIPTIONS

JOUR 2160. Introduction to Journalism. (W) (3) Introduction to the basics of news reporting, interviewing, and feature writing, with emphasis on development of news writing skills, field experience, and media ethics. (May not be used for English major requirements.) *(Fall, Spring)*

JOUR 3160. News Writing. (3) Prerequisite: ENGL 2160 or permission of instructor. Journalistic news writing with emphasis on reporting for newspapers. Students write news stories about events occurring during the semester. Examination of historical, legal and ethical aspects of the American press. *(Fall)*

JOUR 3161. News Editing. (3) Prerequisite: ENGL 2160 or permission of instructor. Basic studies in selection, preparation and presentation of news, with primary emphasis on newspapers. Examination of the effects of competition in multimedia news markets. Emphasis on issues of ethics, fairness and accuracy in news coverage, including a review of legal guidelines affecting news presentation. *(Spring)*

JOUR 3162. Feature Writing. (3) Prerequisite: ENGL 2160 or equivalent. Researching, writing, and editing a variety of journalistic features, from human interest stories to investigative reporting. *(Spring) (Alternate years)*

Department of Foreign Languages

Chairperson: Professor Resnick; *Professors:* Gabriel, Miller, Saman, Suther; *Professor Emeritus:* Bush; *Associate Professors:* Cernyak, Gleaves, Hopper, Merrill, Park, Reimer, Rose, Vance; *Associate Professor Emeritus:* Hoyle; *Assistant Professors:* Bissiere, Gartner, Gonzalez, Hart, McLeod, Noiset, Rivera, Sandarg, Stephenson; *Lecturers:* Castro, Domoto

The Department of Foreign Languages has designed its programs to develop language skills and to provide insights into foreign cultures through the study of language, culture and literature. The Department offers the Bachelor of Arts degree with majors in French, German and Spanish. It also offers minors in the same languages, as well as a Certificate in Translating. Courses in Russian are offered regularly, and courses in Arabic, Chinese, Greek, Hebrew, Italian, Japanese, Latin and Portuguese are offered on a limited basis, according to demand.

Students interested in foreign language study are encouraged to investigate the following options: (1) a single major in French, German or Spanish, based on the standard liberal arts model, with or without teaching certification; (2) a double major in a foreign language and another discipline or in two languages; (3) a foreign language minor; (4) an unofficial concentration in one or more languages to complement a major in another academic area; and (5) a concentration in translating.

Foreign language students may become certified to teach French, German or Spanish. Career opportunities for students who gain proficiency in one or more languages exist in education, business, government, industry, the military, nursing and social work. Courses in Business French, German and Spanish and the four-semester Concentration in Translating are especially helpful for those who want to use a foreign language in the world of business and commerce.

Summer Scholarships and Study Abroad. Scholarships for summer study and employment abroad are available to students of French, German and Spanish. As a rule, applicants are required to major or minor in language to be eligible, and they must have completed at least two years of study in the language they propose to use abroad. For detailed information, see scholarship coordinators in the Department of Foreign Languages.

BACHELOR OF ARTS

General Requirements for All Majors. All students are required to fulfill general education requirements as listed under the Goals of UNCC Education, pages 63-67 in this *Catalog,* in addition to coursework specified below. *Note:* Introductory language courses may not be taken on a pass/no credit basis if they are being used to fulfill the university foreign language requirement. Students majoring or minoring in language may not take courses in the department on a pass/no credit basis.

Placement. The Department of Foreign Languages will recommend the placement of students on a level commensurate with their demonstrated competence at the time of enrollment and considering their previous language training or experience. Placement exams (not to be confused with the Foreign Language Proficiency Exams) are usually given at the beginning of the fall and spring semesters.

Laboratory and Practicum. In addition to meeting for three hours of class, all students of modern foreign languages at the 1000 and 2000 levels are required to attend a laboratory or practicum two hours per week. Instructors in other courses may also assign laboratory work.

Teacher Certification. The student seeking certification to teach a foreign language must fulfill the general education requirements, the foreign language major, FORL 4200 and 4201, and all courses required for certification by the College of Education and Allied Professions.

FRENCH. The French major offers three options:

A. The French major leading to the B.A. degree consists of FREN 2201, 2202, 2207, 3201, 3202, 3203, 3209, 4201, 4202 and at least two additional courses at the 4000 level. Related work is to be approved by the Department.

B. The French major leading to a B.A. degree with secondary school teaching includes the same courses as option "A" and, in addition, FORL 4200, Methods of Teaching a Second Language and all courses required for certification by the College of Education and Allied Professions. Candidates for a degree with certification in elementary teaching may take option "C," plus FORL 4200.

C. The modified French major leading to a B.A. degree consists of FREN 2201, 2202, 2207, 3201, 3202, 3203, 3209, 4201 and 4202. This option is for double majors.

GERMAN. A major in German leading to a B.A. degree consists of GERM 2201, 2202, 3201, 3202, 3030, 3050 (two courses under different topics), 4203 or 4204, 4010 or 4020, or an additional course on the 3000 or 4000 level. German majors must enroll for one hour of GERM 4050 for each GERM 3230 or 3050 course they take. In addition, 15 hours of related work (or a declared minor), to be approved by the German language staff, will be required. The program of courses for candidates for teacher certification will be the same as above with requirements specified by the College of Education and Allied Professions.

Students majoring in German and seeking a Certificate in Translating in German must take the courses listed above for a B.A. in German, but may eliminate one GERM 3000 and one GERM 4000 course. They must also take TRAN 3271, 3272, 3273 and 3274.

SPANISH. A major in Spanish leading to the B.A. degree consists of SPAN 2201, 2202, 3201, 3202, 3203, 3209 or 3210, and 3212, plus 12 hours of Spanish courses on the 4000 level.

FOREIGN LANGUAGE MINOR

FRENCH. A minor in French consists of 23 hours above the 1202 level, as follows: FREN 2201, 2202, 2207, 3201, 3202, 3203 and 3209. Students who wish to take Commercial French (FREN 2205) and count it toward the minor may do so by substituting Commercial French for FREN 2207, 3203 or 3209.

GERMAN. A minor in German consists of GERM 2201, 2202, 3201, 3202, and six additional hours of 3000 or 4000 level German courses, for a total of 20 hours. A student who waived GERM 2201 and/or 2202 must take the equivalent number of GERM 3000 or GERM 4000 level courses.

SPANISH. A minor in Spanish consists of SPAN 2201, 2202 or 2210, 3201 or 3202, 3203 or 3212, 3209 or 3210, and six additional hours at the SPAN 3000 or SPAN 4000 level, for a total of 23 hours. The student who is waived from SPAN 2201 must take at least one additional course at the SPAN 3000 or SPAN 4000 level.

CERTIFICATE IN TRANSLATING

Successful completion of TRAN 3271, 3272, 3273 and 3274 entitles the student to a Certificate in Translating. This certificate is not equivalent to a major in a foreign language, but it represents a skill developed at the bachelor's degree level. The Certificate in Translating may be taken in conjunction with a major in any field. All courses in this sequence involve translating into English from the source language.

FOREIGN LANGUAGES—GENERAL COURSE DESCRIPTIONS

The following languages are offered on demand at the beginning level (1201 and 1202) and the intermediate level (2201 and 2202), with variable credit of 3-4 hours: Arabic (ARBC), Chinese (CHNS), Danish (DNSH), Greek (GREK), Hebrew (HBRW), Italian (ITLN), Japanese (JAPN), Latin (LATN), and Portuguese (PORT). The number of hours credit for each course (3-4) is determined by the necessity or availability of a lab program.

1201. Elementary Foreign Language. (3-4) Prerequisite: permission of the Department. Fundamentals of grammar and phonetics, reading, writing and conversation.

1202. Elementary Foreign Language. (3-4) Prerequisite: 1201 or permission of the Department. Continuation of 1201.

2201. Intermediate Foreign Language. (3-4) Prerequisite: 1202 or permission of the Department. Review grammar, conversation, composition and readings based on the culture and civilization.

2202. Intermediate Foreign Language. (3-4) Prerequisite: 2201 or permission of the Department. Review grammar, conversation, composition and readings based on students' needs.

FOREIGN LANGUAGES—SPECIAL TOPICS (FORL)

FORL 3050. Topics in Language, Literature and Culture. (A) (3) Studies in a selected field of interest. May be repeated for credit. *(On demand)*

FORL 3060. European Cinema. (3) Prerequisites: Sophomore standing and ENGL 1102 or equivalent. Introduction to films of the various national cinemas of Europe and strategies required for analyzing and discussing film critically and effectively. Lectures, discussions, viewing films, writing assignments, reviews, critiques and analyses. *(Spring)*

FORL 3800. Directed Individual Study. (1-3) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

FORL 4200. Secondary Methods—Foreign Languages. (3) (3G) Prerequisite: Completion of at least two 3000-level courses or equivalent in the target language, or permission of the department. Current trends and practices in teaching foreign and second languages in the middle school and high school, with emphasis on practical applications. Addresses state-mandated competencies. Required for certification in the teaching of foreign language and recommended for certification in teaching English as a Second Language. *(Fall) (Evenings)*

FORL 4201. Foreign Languages in the Elementary School Methods. (3) (3G) Prerequisite: Completion of at least two 3000-level courses or equivalent in the target language, or permission of the department. Current trends and practices in teaching foreign and second languages in the elementary school, with emphasis on practical applications. Addresses state-mandated competencies. Required for certification in the teaching of a foreign language and recommended for certification in teaching English as a Second Language. *(Spring) (Evenings)*

FORL 4800. Directed Individual Study. (1-3) (1-3G) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

CERTIFICATE IN TRANSLATING (TRAN)

TRAN 3271. Introduction to Translating. (3) Prerequisite: completion through 2202 level of one language other than English, or equivalent. History and present practice of translating: difference between translating and interpreting; psychological differences among speakers of different languages; patterns of language development; non-verbal language; levels of language; theories of translating; demonstrations of interpreting; career options, professional associations and their functions; sources of employment information. *(Fall) (Alternate years)*

TRAN 3272. Elementary Translating. (3) Prerequisites: native fluency in English and completion through 2202 level of source language, or equivalent. TRAN 3271 is required for students taking the Certificate sequence, and is strongly recommended for any others who wish to take TRAN 3272. Comparative analysis of translated texts; questions of restructuring texts and adding or subtracting material; style/audience relationship; simple translations from source language to English; sight translation. *(Spring) (Alternate years)*

TRAN 3273. Intermediate Translating. (3) Prerequisite: successful completion of TRAN 3272. Critical analysis of different kinds of English texts and of texts translated into English; translations for specific audiences; problems of terminology; history and theories of translating; development of working dictionaries in field of specialization; investigation of employment opportunities. *(Fall) (Alternate years)*

TRAN 3274. Advanced Translating. (3) Prerequisite: successful completion of TRAN 3273. Study of professional journals in the field of translation; specific problems of source/target language equivalents; expansion of working dictionaries; oral reports on work in progress; translating of substantial text(s) in field of specialization. Texts may be scientific, technical, commercial, scholarly or literary, depending on field of specialization, but in all cases will be works that have not been adequately translated before. *(Spring) (Alternate years)*

FRENCH (FREN) COURSE DESCRIPTIONS

Courses for Undergraduates

FREN 1050. Special Approaches to the Study of French. (1-6) Course may be repeated with change of topic. *(On demand)*

FRENCH (FREN) COURSE DESCRIPTIONS

Courses for Undergraduates

FREN 1201. Elementary French I. (3) Corequisite: FREN 1201L. Introduction to the sounds and structure of the French language with emphasis on vocabulary and the skills of listening, speaking, reading, and writing. *(Fall, Spring, Summer) (Evenings)*

FREN 1201L. Elementary French Practicum. (1) Corequisite: FREN 1201. Active use of French language skills. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

FREN 1202. Elementary French II. (3) Prerequisites: FREN 1201 and 1201L, or permission of the Department. Corequisite: FREN 1202L. Continuation of FREN 1201. Three class hours per week. *(Fall, Spring, Summer) (Evenings)*

FREN 1202L. Elementary French Practicum. (1) Corequisite: FREN 1202. Active use of French language skills. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

FREN 2050. Topics in French. (1-3) Course may be repeated with change of topic. *(On demand)*

FREN 2201. Intermediate French I. (4) Prerequisites: FREN 1202 and 1202L, or permission of the Department. Review of French grammar with conversation and composition based on selected readings. Three class hours and two lab hours per week. *(Fall, Spring)*

FREN 2202. Intermediate French II. (4) Prerequisites: FREN 2201 and 2201L, or permission of the Department. Conversation and composition based on readings in French literature and culture. Film and slide presentations. Three class hours and two lab hours per week. *(Fall, Spring)*

FREN 2205. Commercial French. (3) Prerequisite: FREN 1202 or equivalent, or permission of the Department. A study of the structure and phraseology of French business letters as well as routine messages and communications. Emphasis on commercial, banking, and telecommunication terminology. *(Spring)*

FREN 2207. French Phonetics. (3) Prerequisites: FREN 1202 or permission of the Department. Study of the sounds of the French language, their production and representation by means of the International Phonetic Alphabet. Practice in reading and speaking with proper rhythm and intonation. *(Fall)*

FREN 2209. French Civilization. (3) Conducted in English. No knowledge of French required. Open to majors or non-majors for elective credit. A study of the French people, past and present, with emphasis on cross-cultural contrasts in attitudes and values. *(On demand)*

FREN 3050. Topics in French. (1-3) Course may be repeated with change of topic. *(On demand)*

FREN 3201. French Grammar and Conversation. (3) Prerequisite: FREN 2202 or permission of the Department. Review of French grammar and guided conversation on prepared topics. Emphasis on spoken French. *(Fall)*

FREN 3202. French Grammar and Composition. (3) Prerequisites: FREN 2202 and 2207 or concurrent enrollment in FREN 2207. FREN 3201 recommended. Review of French grammar and guided compositions on prepared topics. Emphasis on vocabulary, idiomatic expressions, and stylistics. *(Spring)*

FREN 3203. Introduction to French Literature. (3) Prerequisites: FREN 2207 and 3201, or permission of the Department. Development of techniques for literary study through analysis of selected major works in French literature. Readings, discussions, presentations, and *explications de texte. (Alternate years)*

FREN 3209. French Culture and Civilization. (3) Prerequisite: FREN 3201 or permission of the Department. France since the 19th century and cross-cultural views of France and America. Special attention to contemporary France. *(Alternate years)*

FREN 3800. Directed Individual Study. (1-3) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

FREN 4003. Studies in French Literature. (3) (3G) Prerequisite: FREN 3203, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

FREN 4005. Studies in the French Language. (3) (3G) Prerequisites: FREN 3201 and 3202, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

FREN 4007. Studies in French Culture and Civilization. (3) (3G) Prerequisites: FREN 3201, 3202, and 3209, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

FREN 4201. Survey of French Literature I. (3) (3G) Prerequisite: FREN 3203. Prerequisite or corequisite: FREN 3209. The major literary movements from the Middle Ages to the Enlightenment, with sample texts. Emphasis on continuity and change. *(Alternate years)*

FREN 4202. Survey of French Literature II. (3) (3G) Prerequisite: FREN 3203. Prerequisite or corequisite: FREN 3209. The major literary movements from the Enlightenment to the contemporary period, with sample texts. Emphasis on continuity and change. *(Alternate years)*

FREN 4800. Directed Individual Study. (1-3) (1-3G) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

GERMAN (GERM) COURSE DESCRIPTIONS

Courses for Undergraduates

GERM 1201. Elementary German. (3) Corequisite: GERM 1201L. Fundamentals of the German language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

GERM 1201L. Elementary German Practicum. (1) Corequisite: GERM 1201. Drill, practice, practical application of structures and concepts. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

GERM 1202. Elementary German. (3) Prerequisite: GERM 1201 and 1201L, or equivalent. Corequisite: GERM 1202L. Fundamentals of the German language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

GERM 1202L. Elementary German Practicum. (1) Corequisite: GERM 1202. Drill, practice, practical application of structures and concepts. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

GERM 2201. Intermediate German. (4) Prerequisite: GERM 1202 or permission of the Department. Review of grammar, composition and conversation, based upon readings on the culture and civilizations of German-speaking countries. Three class hours and two lab hours per week. *(Fall, Spring)*

GERM 2202. Intermediate German. (4) Prerequisite: GERM 2201 or permission of the Department. Continuation of GERM 2201. Review of grammar, composition and conversation, based upon readings on the culture and civilization of German-speaking countries. Three class hours and two lab hours per week. Students who wish to continue with advanced offerings in German are advised to select GERM 2202. *(Fall, Spring)*

GERM 3030. Studies in German Culture. (A) (3) Prerequisite for German major: satisfactory completion of GERM 2202 or equivalent. Conducted in English. No knowledge of German required. A study of the life and thought of German-speaking people both past and present. Course topic will concentrate on a geographical area, a particular cultural institution or a particular period. May be repeated as topic changes. *(Alternate years)*

GERM 3050. Studies in German Literature. (L) (3) Prerequisite for German major: satisfactory completion of GERM 2202 or equivalent. Conducted in English. No knowledge of German required. May be repeated as topic changes. *(Yearly)*

GERM 3201. Advanced German Grammar, Composition and Conversation I. (3) Prerequisite: GERM 2202 or permission of the Department. For prospective teachers of German and students who want intensive oral and written work in the language. Three class hours per week and lab work as assigned by instructor. *(Yearly)*

GERM 3202. Advanced German Grammar and Composition II. (3) Prerequisite: GERM 2202 or permission of the Department. Intensive review of German grammar. Discussion of prepared topics drawn from newspapers and periodicals. Three class hours per week and laboratory work as assigned by instructor. *(Yearly)*

GERM 3210. Business German. (3) Prerequisite: GERM 2202 or equivalent. Introduction to the spoken and written language of the German business world; formalities and conventions of business correspondence, import/export, economics, and commercial transactions. *(Alternate years)*

GERM 3800. Directed Individual Study. (1-3) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

GERM 4010. Periods in the History of German Literature. (3) (3G) (a) Medieval literature, (b) Classicism, (c) Romanticism, (3) Contemporary literature. Prerequisites: two 3000-level courses or permission of the Department. Study of the major writers and works in a given period. Readings, lectures and reports. May be repeated for major credit with change of topic. *(Alternate years)*

GERM 4020. The Chief Genres in German Literature. (3) (3G) (a) Novel, (b) Theater, (c) Lyric poetry. Prerequisites: two 3000-level courses or permission of the Department. An analysis of a major genre and its development within German literary history. Readings, lectures and reports. May be repeated for major credit with change of topic. *(Alternate years)*

GERM 4050. Special Topics in German. (1-2-3) (1-2-3G) Prerequisite: one 3000-level course or permission of the instructor. Treatment of a special group or figure in German literature, specialized topic in German culture or advanced work in German language. May be repeated for credit with change of topic. *(Fall, Spring, Summer)*

GERM 4203. Survey of German Literature I. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. General introduction to German literature from the Middle Ages to the Classical Period. Book reports and class discussion on collateral readings. *(On demand)*

GERM 4204. Survey of German Literature II. (3) (3G) Prerequisite: two 3000-level courses or permission of the Department. German literature since Classicism. Book reports and discussions on collateral readings. *(On demand)*

GERM 4800. Directed Individual Study. (1-3) (1-3G) Prerequisite: permission of the department; normally open only to FL majors and minors. Individual work on a selected area study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

RUSSIAN (RUSS) COURSE DESCRIPTIONS

RUSS 1201. Elementary Russian. (3) Corequisite: RUSS 1201L. Fundamentals of the Russian language, including speaking, comprehension, reading, writing. *(Fall)*

RUSS 1201L. Elementary Russian Practicum. (1) Corequisite: RUSS 1201. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall)*

RUSS 1202. Elementary Russian. (3) Prerequisites: RUSS 1201 and 1201L. Fundamentals of the Russian language, including speaking, comprehension, reading, writing. *(Spring)*

RUSS 1202L. Elementary Russian Practicum. (1) Prerequisites: RUSS 1201 and 1201L. Corequisite: 1202. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Spring)*

RUSS 2201. Intermediate Russian. (4) Prerequisite: RUSS 1202 or permission of the Department. Review of grammar, with conversation and composition based upon readings in Russian culture and civilization. Three class hours and two lab hours per week. *(On demand)*

RUSS 2202. Intermediate Russian. (4) Prerequisite: RUSS 2201 or permission of the Department. Continuation of grammar, conversation and composition skills, based on readings in Russian literature. Three class hours and two labo hours per week. *(On demand)*

SPANISH (SPAN) COURSE DESCRIPTIONS

Courses for Undergraduates

SPAN 1201. Elementary Spanish. (3) Corequisite: SPAN 1201L. Fundamentals of the Spanish language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

SPAN 1201L. Elementary Spanish Practicum. (1) Corequisite: SPAN 1201. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

SPAN 1202. Elementary Spanish. (3) Prerequisites: SPAN 1201 and 1201L, or equivalent. Corequisites: SPAN 1202L. Fundamentals of the Spanish language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

SPAN 1202L. Elementary Spanish Practicum. (1) Corequisite: SPAN 1202. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

SPAN 2050. Topics in Spanish. (1-3) Prerequisite: SPAN 2201 or permission of the Department. Study of a particular facet of the Spanish language, culture or literature. May be repeated for credit as topics vary. *(On demand)*

SPAN 2009. Hispanic Literature in English Translation. (WL) (3) Studies of Spanish or Spanish American literature in translation. Not applicable toward Spanish major. May be repeated for credit as topics vary. Course conducted in English. *(On demand)*

SPAN 2201. Intermediate Spanish. (4) Prerequisite: SPAN 1202 or permission of the Department. Reinforcement and expansion of skill mastery developed in elementary courses on basis of grammar review and conversation. Three class hours and two lab hours per week. *(Fall, Spring)*

SPAN 2202. Intermediate Spanish. (4) Prerequisite: SPAN 2201 or permission of the Department. Extensive practice in oral and written control of the language on basis of readings from Spanish or Spanish American literature. Three class hours and two lab hours per week. *(Fall, Spring)*

SPAN 2210. Business Spanish. (3) Prerequisite: SPAN 2201 or equivalent. Introduction to the spoken and written language of the Hispanic business community. Acquisition and use of financial, legal and commercial terminology. Three class hours and two lab hours per week. (Alternate to SPAN 2202.) *(Alternate years)*

SPAN 3201. Advanced Grammar and Composition. (3) Prerequisite: SPAN 2202 or permission of the Department. Intensive oral and written work in Spanish. *(Fall)*

SPAN 3202. Advanced Conversation and Composition. (3) Prerequisite: SPAN 2202 or permission of the Department. Intensive oral and written work in the language. Reports on collateral readings. *(Spring)*

SPAN 3203. Introduction to Spanish Literature. (3) Prerequisite: SPAN 2202 or permission of the Department. Reading and analysis of representative master works of Spanish literature from its origins through the 20th century. *(Alternate years)*

SPAN 3209. Spanish Civilization and Culture. (3) Prerequisite: SPAN 2202 or permission of the Department. An overview of the cultural heritage of peninsular Spain. *(Alternate years)*

SPAN 3210. Spanish American Civilization and Culture. (3) Prerequisite: SPAN 2202 or permission of Department. Introduction to the cultural heritage of Spanish America. *(Alternate years)*

SPAN 3212. Introduction to Spanish American Literature. (3) Prerequisite: SPAN 2202 or permission of the Department. Introduction to studies in Spanish American literature from the 16th century through the contemporary period. *(Alternate years)*

SPAN 3231. Spanish Phonetics. (3) Prerequisite: SPAN 2202 or permission of the Department. Detailed analysis of description and production of Spanish sounds. Practical exercises include phonetic transcription and recordings. Two class hours and two lab hours per week. *(On demand)*

SPAN 3800. Directed Individual Study. (1-3) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

SPAN 4050. Selected Readings in Spanish. (1-2-3) (1-2-3G) Prerequisites: two 3000-level courses or permission of the Department. Consideration of a predetermined topic. May be repeated for credit as topics vary. *(Yearly)*

SPAN 4201. Nineteenth-Century Spanish Literature. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Survey of peninsular literature from Costumbrismo through the Generation of 1898. Lectures, discussions and reports. *(Alternate years)*

SPAN 4202. Twentieth-Century Spanish Literature. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Treatment of major literary developments from the Generation of 1898 to present day. Lectures, discussions and reports. *(Alternate years)*

SPAN 4205. Novel of the Golden Age. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. *El Lazarillo* through *El Criticon.* Lectures, discussions and reports. *(Alternate years)*

SPAN 4206. Theater of the Golden Age. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Study of works of the leading dramatists of the period. Lectures, discussions and reports. *(Alternate years)*

SPAN 4210. Studies in Spanish American Poetry. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Studies of 19th- and 20th-century Spanish American poetry. *(Alternate years)*

SPAN 4211. Studies in Spanish American Prose Fiction. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Studies of 19th- and 20th-century Spanish American prose fiction. *(Alternate years)*

SPAN 4212. Studies in Spanish American Theater. (3) (3G) Prerequisites: two 3000-level courses or permission of the Department. Studies of 20th-century Spanish American theater. *(On demand)*

SPAN 4213. Don Quijote. (3) (3G) Prerequisites: two 3000-level Spanish courses or permission of the Department. Study of Cervantes' masterpiece, which is considered by many critics to be the basis of the modern Western novel. *(On demand)*

SPAN 4800. Directed Individual Study. (1-3) (1-3G) Prerequisite: Permission of the department; normally open only to FL majors and minors. Individual work on a selected area of study. To be arranged with the instructor, generally during the preceding semester, and by special permission only. May be repeated for credit. *(On demand)*

Department of Geography and Earth Sciences

Chairperson: Associate Professor Walcott; *Professors:* Clay, Furuseth, Hartgen, Ingalls, Lord, Pyle, Schul, Steila, Stuart; *Associate Professors:* Bender, Bobyarchick, Ives; *Assistant Professors:* Diemer, Forsythe, Martin, Moore, Xiang; *Lecturers:* Bloomer, Simpson, Smith

The Department of Geography and Earth Sciences offers an interdisciplinary program of study that has two different but related components. Earth Sciences includes the study of the history and structure of the earth and its atmosphere. Geography emphasizes the locational aspects of human activities as they are distributed over the earth.

Earth Sciences. The Earth Sciences program focuses on the earth as a dynamic natural system. Coursework in areas such as mineralogy, geochemistry, structural geology, tectonics, stratigraphy, petrology and optical mineralogy constitutes the equivalent of a major in geology. Alternatively, some of the courses may be combined with others such as hydrologic processes, soil science and meteorology to complete a concentration in environmental earth sciences.

Students majoring in earth sciences pursue careers in mining, oil and gas exploration, meteorology, environmental planning, site analysis, terrain analysis, and in teaching at all levels. There are employment opportunities in both government and private industry with the greatest range of positions available to students who earn graduate degrees. The program is designed to prepare students for advanced study in geology and earth sciences.

Geography. The Geography curriculum is oriented toward the methodologies of social science in which the importance of location is stressed. Traditional regional studies and conceptual courses that deal with land use patterns, transportation systems, industrial location, the distribution of retail activities, city planning, and urban systems are augmented by technique-oriented courses such as map design and compilation, computer mapping, analysis of satellite images, statistical methods and geographic information systems. These courses prepare students in both the concepts and methods of contemporary spatial analysis.

Students majoring in geography find careers open to them in urban and regional planning, cartography, marketing research, transportation planning, real estate development and teaching. As in the earth sciences, the greatest range of opportunities is open to those who earn graduate degrees. (See *The Graduate School* section of this *Catalog* regarding the M.A. degree program).

A unique advantage of the Department's interdisciplinary curriculum is that students majoring in one component of the program may take related courses in the other component. A student concentrating in geology, for example, might study computer mapping as part of the earth sciences major. Conversely, a geography student interested in land use planning could take supporting coursework in soil science or hydrology as part of the major.

Facilities. The Department of Geography and Earth Sciences is housed in modern, well-equipped facilities. Extensive rock, mineral and fossil holdings are available for instructional purposes. The optical mineralogy laboratory features high-quality petrographic microscopes linked with an image analysis system. Analytical facilities also include a geochemical sample preparation laboratory, a plasma emission spectrometer and a rapid sediment analyzer. The petrology lab employs a precision thin section machine and an automated photomicrography unit that is attached to a research-grade polarizing microscope. A proton magnetometer is available for ground-based field surveys. Frequent field trips are facilitated by the Department's vans, extensive field instruments and camping gear.

The environmental earth science laboratory houses the Department's Meteorology Data Acquisition System (McIDAS), a geographic information systems package that provides "real time" meteorological data via links to weather satellites. Stream gauges and soil analysis instruments are on hand for use in fluvial processes and soils labs.

Students have access to a Departmental computer lab equipped with networked Apple Macintosh and IBM microcomputers, a file server, and printer. This facility is networked to other labs on campus and to the University's mainframe computers. A separate Geographic Information System (GIS) and remote sensing lab houses a Sun Microsystems 4/390 fileserver, Sun Sparc workstations, digitizers, and a large format color electrostatic plotter. Arc/Info and Erdas software packages

run on the workstations and are used to support classes in GIS, remote sensing and image processing, and spatial decision support systems. The department also maintains a large collection of geographically-referenced data for use by students and staff in the lab. These data sets include satellite imagery, U.S. Census Bureau files, and U.S. Geological Survey map data as well as locally-developed data sets.

The UNCC cartography lab has earned a reputation for its high quality production cartography. It has three fully-equipped darkrooms with process cameras, contact frames, platemakers and color proof exposure units. Two finishing rooms house cartographic equipment such as high-end Apple computer workstations, laser printers and scanners, and a high resolution electronic image setter.

Cooperative Education in Geography and Earth Sciences. Students in the Geography and Earth Sciences programs may obtain practical work experience while pursuing their degrees by participating in the Cooperative Education program. The work experience is approved by the Department and is closely related to the student's field of study. Students interested in learning more about participating in this program should contact the Department of Geography and Earth Sciences.

GEOGRAPHY MAJOR: BACHELOR OF ARTS

A major leading to a B.A. degree consists of 29 hours in geography and earth sciences and will include GEOG 1101, 1105, 2100, 2101, 2110 and ESCI 1101. Except for required courses, all work offered for the major must be numbered 2100 or above. Students are encouraged to take additional coursework in related disciplines or to select a second major.

GEOGRAPHY MAJOR: BACHELOR OF SCIENCE

A major leading to a B.S. degree consists of 40 hours of geography and earth sciences and will include GEOG 1101, 1105, 2100, 2101, 2110 and ESCI 1101. In addition, students must complete ENGL 2116 (Introduction to Technical Communication) as well as general education English requirements, and CSCI 1100 and one mathematics course above MATH 1103. Informal concentrations are available within the major in areas such as urban analysis and planning, locational analysis, cartographic techniques and research methodologies. Students should contact their advisers about these and other possible concentrations. Except for required courses, all work offered for the major must be in courses numbered 2100 or above.

Geography Minor. A minor in geography consists of 19 hours, including GEOG 1101 and 1105 and ESCI 1101, and nine additional hours in geography. The minor can be tailored to support a number of majors, such as business, computer science, political science and architecture.

EARTH SCIENCES MAJOR: BACHELOR OF ARTS

A major in Earth Sciences leading to the B.A. degree consists of a minimum of 30 semester hours, including ESCI 1101, 1200, and 1200L. The remaining 22 hours are selected from geography and earth sciences and must include at least nine hours in earth sciences courses numbered 3000 or above. Students are encouraged to take additional coursework in related sciences and mathematics or to select a second major.

EARTH SCIENCES MAJOR: BACHELOR OF SCIENCE

A major in Earth Sciences leading to a B.S. degree consists of a minimum of 40 hours in earth science or geography and will include ESCI 1101, 1200, 1200L, and 1210. Of the remaining 28 hours, 22 must be taken in earth sciences courses numbered 3000 or above. Appropriate geography courses may be taken to satisfy part of this 22 hour requirement in the Atmospheric Science-Hydrology and Environmental options. Additional requirements are: (1) two semesters (eight hours) of biology, chemistry or physics; and (2) two semesters (at least six hours) of mathematics numbered 1141, or higher, as well as general education requirements.

Students pursuing the B.S. degree are encouraged to choose one of the following four options: a) **Geology;** b) **Geotechnology;** c) **Atmospheric Science-Hydrology;** or, d) **Environmental.** Students must work closely with an adviser in Earth Sciences to follow a program of requirements in one of these options.

Earth Sciences Minor. A minor in earth sciences consists of 20 hours of earth sciences courses. Students will choose either a geology option (ESCI 1200, 1200L and 1210 are required) or an environmental earth sciences option (ESCI 1101, 3250 and 4140 are required); and take 12 additional hours in earth sciences. The minor can be tailored to support a number of majors, such as engineering, biology, chemistry or physics.

SUGGESTED SCHEDULE: B.S., GEOGRAPHY

Freshman Year

ENGL 1101 3	GOAL V: L 3
MATH 1100 or 1101 or 1103 3	ENGL 1102 3
ESCI 1101 4	MATH 1120 3
GEOG 1101 3	ESCI 1200, 1200L (GOAL IV) 4
	GEOG 1105 (GOAL VI) 3

Sophomore Year

CSCI 1100 4	FORL 1201 4
ENGL 2116 3	ESCI 2101 (GOAL III) 3
GEOG 3265 (GOAL VI) 3	GOAL V: A 3
GEOG 2100 3	GEOG 2110 3
GEOG 2101 1	ESCI 1210 (GOAL IV) 4

Junior Year

GOAL I: W 3	GEOG Electives 6
GEOG Electives 9	Electives 6
FORL 1202 4	GOAL IV 3

Senior Year

GEOG Elective 3	Electives 14
Electives 12	

SUGGESTED SCHEDULE: B.S., EARTH SCIENCE

Student pursuing the B.S. degree in Earth Science must work closely with an adviser in Earth Science to follow a program to complete degree requirements in one of the four options offered by the department. The options include: (a) **Geology**; (b) **Geotechnology**; (c) **Atmospheric Science-Hydrology**; or (d) **Environmental.**

GEOGRAPHY (GEOG) COURSE DESCRIPTIONS

Courses for Undergraduates

GEOG 1101. World Regional Geography. (X) (3) A world regional study which emphasizes the distinctly human responses of people to various geographic situations throughout the world. The nature and development of cultural regions will be studied. *(Fall, Spring, Summer) (Evenings)*

GEOG 1105. The Location of Human Activity. (C) (3) An examination of factors which account for the locational characteristics of economic and other human activities. The locational decision-making process is examined as a means of understanding human spatial behavior. *(Fall, Spring, Summer)*

GEOG 2100. Maps and Graphs. (3) A study of cartography and its essential processes, with particular emphasis on the map as a communication system, the effective communication of data by means of graphical symbols, map interpretation and discussion of map production techniques. *(Fall, Spring) (Evenings)*

GEOG 2101. Cartographic Laboratory. (1) Prerequisite or corequisite: GEOG 2100. The laboratory emphasizes thematic mapping and design. This includes basic map construction techniques, including desktop mapping with computers. Two hours of laboratory per week. *(Fall, Spring) (Evenings)*

GEOG 2110. Introduction to Geographic Research. (3) Research design and resources in geographic research. Emphasis on spatial applications in summary statistics; spatial summaries, statistical hypothesis testing; sampling and estimation; association, correlation and regression. *(Fall, Spring) (Evenings)*

GEOG 2150. Geography of Polar Regions. (3) Arctic and Antarctic regions, history of exploration, the physical environment and political significance. *(Yearly)*

GEOG 2155. Geography of the U.S. and Canada. (3) Geographic structure of the U.S. and Canada with emphasis on physical environment and patterns of human activities. *(Fall)*

GEOG 2160. The South. (3) The culture, environment, population and economy of the southeastern U.S.; emphasis on current trends and future implications. *(Yearly)*

GEOG 3000. Topics in Regional Geography. (3) Examination of major geographical regions of the world. May be repeated for credit as topics vary. *(Yearly)*

GEOG 3100. The City and Its Region. (3) Study of the regional system of cities in terms of their size, spacing, historical evolution, functional relationships and future prospects. *(Fall, Spring)*

GEOG 3110. Urban Political Geography. (3) Spatial organization of metropolitan America. How metropolitan residents organize space into territorial units and the human, social and political ramifications of that organization. Spatial consequences of the most common modes of political, administrative and territorial organization. *(Alternate years)*

GEOG 3115. Urban Transportation Problems. (W) (3) Problems associated with moving goods, people and information in urban areas. Topics include mass transit and pollution problems. *(Alternate years)*

GEOG 3150. Manufacturing Geography. (3) Factors relating to the nature, locations and development of manufacturing industries. Emphasis upon classification of manufacturers, principal areas of manufacturing and the role of manufacturing in regional development. *(Spring) (Evenings)*

GEOG 3200. Land Use Planning. (3) Land use planning, with emphasis on basic planning processes, implementation techniques and strategies, and issues confronting contemporary urban and rural planning. *(Spring)*

GEOG 3210. Regional Planning. (3) Introduction to regional planning strategies and approaches developed by regional planning agencies. Urban-regional planning relationships with emphasis on techniques used in regional analysis. *(On Demand)*

GEOG 3215. Environmental Planning. (W) (3) Interaction and relationships between natural and human-made elements of the environment with emphasis on planning concepts and methodologies used in contemporary environmental planning. *(Fall)*

GEOG 3250. World Food Problems. (3) Magnitude, consequences, major causes and potential solutions to the world's food problems. *(On demand)*

GEOG 3260. Medical Geography. (3) Traditional aspects of medical geography including disease mapping, disease ecology and statistical association and more recent social scientific topics, including disease diffusion, health care facilities planning and spatial behavior. *(On demand)*

GEOG 3265. Behavioral Geography. (C or VW) (3) Behavioral approach to environmental decision-making, personal space, territoriality, room and building geography, consumer behavior, activity space, perception of wilderness and natural hazards, communication biases. *(Fall)*

GEOG 3500. Geography Cooperative Education Experience. (0) Enrollment in this course is required for the Department's geography cooperative education students during the semester that they are working. Evaluation is *Pass/No Credit. (On demand)*

GEOG 3501. Geography Cooperative Education Seminar. (1) This course is required of geography cooperative education students in the semester following each work assignment for presentation of geography reports on the co-op learning experience. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

GEOG 4000. Selected Topics in Geography. (3) (3G) Prerequisite: consent of instructor. An intensive study of topics in geography from such areas as urban, manufacturing, retailing activity, transportation, and political geography. Topics vary from semester to semester. May be repeated for credit as topics vary. *(Yearly)*

GEOG 4100. Cartographic Techniques. (3) (3G) Prerequisite: GEOG 2100. Preparation of maps, figures and charts at a professional level of competence. Techniques to be emphasized include desktop mapping with computers, high resolution imagesetting output, color separation techniques which include computer separations as well as scribing and various related photographic processes. Two laboratories of three hours each per week. *(Spring)*

GEOG 4105. Cartographic Design and Map Construction. (3) (3G) Design process and basic map construction techniques with particular emphasis on the graphic elements of map design, planning map design, creating visual hierarchies, the uses of color, and basic mechanical color separation. *(Fall)*

GEOG 4110. Computer Mapping. (3) (3G) Prerequisites: GEOG 2100 and CSCI 1100 or consent of instructor. Automated methods of gathering, storing, manipulating and displaying spatial data. Emphasis on the use of existing software and the design and implementation of geographic data structures and algorithms. *(Spring)*

GEOG 4115. Geographic Information Systems. (3) (3G) Development, current state-of-the-art and future trends in geographic information processing. Emphasis placed on data gathering, storage, and retrieval, analytical capabilities and display technologies. Class project in which students design a geographic information system for a local application. *(Fall)*

GEOG 4155. Retail Location. (3) (3G) Spatial attributes of retailing and related activities. Location patterns, store location research, trade area delineation and consumer spatial behavior. *(Spring)*

GEOG 4160. The Geography of Transportation Systems. (3) (3G) Geographical and human factors that affect the movement of goods and people from place to place. Emphasis on transportation routes and networks, commodity flow patterns and the locational implications of freight rates. *(Spring)*

GEOG 4205. Internal Structure of the City. (3) (3G) Integrative study of the spatial structure of cities with emphasis on land use patterns and models, transportation systems, residential concentrations, commercial activities and manufacturing zones.*(Fall, Spring, Summer)*

GEOG 4255. Applied Population Analysis. (3) (3G) Population data sources; measuring population change; elementary projection and estimation techniques; spatial sampling; migration; survey design; applications in the public and private sectors. *(Fall)*

GEOG 4400. Internship in Geography. (3-6) (3-6G) Prerequisite: consent of the Department. Research and/or work experience designed to be a logical extension of a student's academic program. The student must apply to Department for an internship by submitting a proposal which specifies the type of work/research experience preferred and how the internship will complement his or her academic program. The student can receive three to six hours credit depending on the nature and extent of the internship assignment. *(On demand)*

GEOG 4800. Individual Study in Geography. (1-4) (1-4G) Permission of Department must be obtained and credit hours established in advance. Tutorial study or special research problems. May be repeated for credit. *(On demand)*

The 5000-level courses are primarily graduate courses; however, advanced undergraduates may enroll in those courses for undergraduate credit. For complete descriptions, see pages 383-386.

EARTH SCIENCES (ESCI)

Courses for Undergraduates

ESCI 1101. Earth Science-Geography. (S) (4) Basic geographical principles and processes in earth science: the grid system, weather, climate, the waters, soils and vegetation. Three lecture hours and completion of weekly laboratory units. *(Fall, Spring, Summer) (Evenings)*

ESCI 1200. Earth Science-Geology. (S) (3) A study of the basic geological principles and processes in earth science; the earth as a planet; treatment of physical processes shaping the earth; earth materials and landforms. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

ESCI 1200L. *Earth Science-Geology Laboratory. (S) (1) Prerequisite or corequisite: ESCI 1200. Experimental study and investigation of the basic geological principles and processes in earth science; minerals, rocks, earth materials, and landforms. One lab period of two hours per week. *(Fall, Spring, Summer) (Evenings)*

ESCI 1210. Earth History. (S) (4) Prerequisites: ESCI 1200, 1200L. The origin and evolution of the earth's major features: the beginnings and changes of the earth's continents, atmosphere, oceans, life forms, set in the vast context of geologic time. Three hours of lecture, two hours of lab per week. *(Fall, Spring, Summer) (Evenings)*

ESCI 2100. The Violent Earth. (3) Volcanoes, earthquakes, hurricanes, tornadoes, floods and other catastrophic natural phenomena with emphasis on causes, effects and human adjustments. *(Fall)*

ESCI 2101. The Environmental Dilemma. (V) (3) Nature, causes and responses to major environmental problems. *(Spring)*

ESCI 2105. Oceanography. (3) Ocenaography with emphasis on physical, chemical and geological aspects of the world oceans. Oceanic circulation, seawater composition and chemistry, and marine sedimentation and geology. *(On demand)*

ESCI 2200. Introduction to Earth Sciences Research. (3) Prerequisites or corequisites: ESCI 1101, 1200 and 1200L. Basic techniques common to research in all of the earth sciences. Research design and organization, utilization of literature resources and the use of quantitative methods. *(Fall, Spring) (Evenings)*

ESCI 2210. Field Methods in the Earth Sciences. (4) Prerequisites: ESCI 1100, 1200, 1200L and ENGL 2116 or consent of instructor. Field techniques used in studies of geology, topography and earth sciences. Skills related to the collection and presentation of scientific data emphasized. Three lecture hours, two hours of lab per week. Earth Science majors should take ESCI 2210 as soon as possible after completion of ESCI 1101 and 1200-1200L. *(Spring, Fall)*

ESCI 3000. Selected Topics in Earth Sciences. (1-4) Prerequisite: ESCI 1101 or 1102-1102L and consent of instructor. In-depth treatment of specific topics selected from one of the fields of the earth sciences. May be repeated for credit as topics vary. *(Yearly)*

ESCI 3110. Minerals and Rocks. (3) Prerequisites or corequisites: ESCI 1200 and 1200L. Formation processes, composition and identification of rocks and minerals in the earth's crust with important abundance or special use. *(On demand)*

ESCI 3115. Mineralogy. (4) Prerequisite: ESCI 1200. Prerequisite or corequisite: CHEM 1101-1101L or consent of the instructor. Identification, classification and description of minerals based on physical properties, crystallography, and chemical composition. Includes diagnostic techniques for identification of common ore and rock forming minerals. Three hours of lecture and one three-hour lab per week. *(Fall)*

ESCI 3120. Geochemistry. (4) Prerequisites: ESCI 1200, 1200L, and CHEM 1101 or consent of the instructor. Geochemical survey of origin, evolution and present composition of the earth. *(Alternate years)*

ESCI 3124. Sedimentary Petrology. (4) (W) Prerequisites: ESCI 1210, 3115 or consent of instructor. Examination of sedimentary rock features and compositions as related to origin, dispersion, deposition, diagenesis, classification and general distribution of sedimentary materials. Three hours of lecture and one three-hour lab per week. *(Fall)*

ESCI 3130. Structural Geology. (4) Prerequisite: ESCI 3115 or consent of the instructor. A systematic examination of the structures and processes of rock deformation. Three lecture hours, one three-hour lab per week. *(Spring)*

ESCI 3150. Natural Environments of North America. (3) Prerequisites: ESCI 1101 or 1200-1200L. Regional geomorphology and ecology of North America with emphasis on development, maintenance, and interaction of the geomorphic and ecological provinces. *(Spring)*

**Although the laboratory and lecture sections of ECSI 1200 are taught as separate courses it is recommended that students take ESCI 1200L concurrently with ESCI 1200. Students with scheduling problems or students not fulfilling the UNCC science and technology requirements may take the lecture without the laboratory. Students fulfilling the UNCC science and technology requirement must either : (a) take ESCI 1200 and ESCI 1200L concurrently or (b) take ESCI 1200L in a semester subsequent to taking ESCI 1200.*

ESCI 3170. Environmental Quality Management. (3) Design and implementation of air and water resource management plans. *(On demand)*

ESCI 3180. Environmental Impact Analysis. (3) Prerequisite: junior-senior standing. Environmental impact requirements and associated procedures, guidelines and methods of assessing physical environmental impacts. Three hours per week of combined lecture and supervised field work leading to the preparation of an environmental impact statement for a locally proposed action. *(On demand)*

ESCI 3190. Environmental Geology. (3) Prerequisites: ESCI 1200, 1200L. Aspects of geology with direct or indirect impact on society. Topics include slope stability, earthquake hazards, solid waste disposal, flooding, ground water problems, soil loss, sediment pollution, watershed dynamics, water and soil pollution, and radioactive waste disposal. *(On demand)*

ESCI 3210. Soil Science. (3) Prerequisites: ESCI 1200, 1200L. Corequisite: CHEM 1101 or consent of the instructor. Study of soils-forming processes, with emphasis on management and use of soils. Two hours of lecture, three hours of lab per week with occasional field trips. *(Fall)*

ESCI 3250. Dynamic Meteorology. (4) Prerequisite:ESCI 1101. In-depth examination of atmospheric dynamics, including the nature of radiation, temperature distribution, observations and station instruments, upper-air soundings and cloud observations, thermodynamics and water vapor, horizontal motion in the atmosphere, characteristics of fluid flow applied to the atmosphere, and the general circulation models. Three hours of lecture and one three-hour lab per week. *(Fall)*

ESCI 3251. Synoptic Meteorology. (4) Prerequisite: ESCI 3250. An extension of ESCI 3250 to include atmospheric modeling, analysis of air mass structure, synoptic analysis with quantitative forecasting techniques, severe storm characteristics, wind shear, boundary-layer meteorology, and techniques for differentiating climatic regime traits and analysis of their variation through time. Three hours of lecture and one three-hour lab per week. *(Spring)*

ESCI 3252. Weather Analysis Laboratory. (1) Prerequisite or corequisite: ESCI 3250 and consent of instructor. Weather observation, meteorologic data collection and analysis, and techniques of weather forecasting. May be repeated for credit. *(Yearly)*

ESCI 3500. Earth Science Cooperative Education Experience. (0) Enrollment in this course is required for the Department's earth science cooperative education students during the semester that they are working. Evaluation is *Pass/No Credit. (On demand)*

ESCI 3501. Earth Science Cooperative Education Seminar. (1) This course is required of earth science cooperative education students in the semester following each work assignment for presentation of earth science reports on the co-op learning experience. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

ESCI 4100. Igneous and Metamorphic Petrology. (4) (4G) Prerequisite: ESCI 3115. Classification, mineralogy and chemical properties of igneous and metamorphic rocks including the tectonic processes by which they formed. Lab emphasizes hand specimen and petrographic description and interpretation of rocks in thin sections. *(Alternate years)*

ESCI 4110. Stratigraphy. (4) (4G) Prerequisite: ESCI 1210. Vertical and horizontal relationships of layered earth materials as a key to understanding basin history, past depositional environments and their transformation through time. Three lecture hours, three lab hours per week. *(Spring) (Alternate years)*

ESCI 4115. Applied Geophysics. (4) (4G) Prerequisites: ESCI 3115, 4110, 3130 and introductory physics or consent of instructor. Instrumental analysis of the earth's physical parameters. Study of human-induced seismic and electrical signals, and natural magnetic and gravitational fields for the purposes of locating faults, ore bodies, ground water and other earth hazards or resources. Three hours of lecture and one two-hour lab per week. *(On demand)*

ESCI 4120. Geologic Mapping and Interpretation. (4) (4G) Prerequisites: ESCI 3130 and 4100 or consent of instructor. Field and lab oriented study using principles of mineralogy, petrology and structural geology. Involves collection and resolution of field data, techniques of presenting data, development of geologic maps, and critical reviews of existing literature. Two hours of lecture, four hours of lab/field work per week. *(On demand)*

ESCI 4125. Geologic Summer Field Camp. (6) (6G) Prerequisite: junior standing and consent of instructor. Concentrated field investigation of geologic features. Data collection in the field, geologic mapping, report and map preparation and time management. Location of field camp will be specified each time course is offered. *(Summer)*

ESCI 4130. Optical Mineralogy. (4) (4G) Prerequisite: ESCI 3115. Light optics theory, the behavior of plane polarized light in a solid medium. The laboratory emphasizes the use of petrographic microscope oil immersion techniques and identification of the common rock forming minerals. Three hours of lecture and one three-hour lab per week. *(Spring)*

ESCI 4135. Tectonics. (4) (4G) Prerequisite: ESCI 3130 or consent of the instructor. A systematic examination of the evolution and dynamics of the earth from the perspective of plate tectonics theory. Three lecture hours, one three-hour lab per week. *(Alternate years)*

ESCI 4140. Hydrologic Processes. (4) (4G) Prerequisite: ESCI 1101 or 1200-1200L. Atmospheric, soils and geologic aspects of surface and ground water processes. Three lecture hours and one two-hour lab per week. *(Fall)*

ESCI 4150. Applied Climatology. (3) (3G) Prerequisites: ESCI 3250 or consent of instructor. Methods of acquiring and analyzing climatic data in various types of applied problems. Emphasis on methods to assess and reduce the economic impacts of weather effects upon human activities. *(On demand)*

ESCI 4155. Fluvial Processes. (4) (4G) Prerequisite: ESCI 4140. Hydrologic and geomorphic study of the transport of water and earth materials within stream systems. Erosion, mass wasting, open channel flow, sediment transport, flooding, stream channel morphology, morphometry of drainage basins, and related topics. Three lecture hours, two lab hours per week. *(Spring)*

ESCI 4400. Internship in Earth Sciences. (3-6) (3-6G) Prerequisite: consent of the Department. Research and/or work experience designed to be a logical extension of a student's academic program. The student must apply to Department for an internship by submitting a proposal which specifies the type of work/research experience preferred and how the internship will complement his or her academic program. The Department will attempt to place the selected students in cooperating community organizations to complete specified research or work-related tasks which are based on a contractual arrangement between the student and community organization. The student can receive three to six hours credit, depending on the nature and extent of the internship assignment. *(On demand)*

ESCI 4800. Individual Study in Earth Sciences. (1-4) (1-4G) Prerequisite: permission of the Department and credit hours established in advance. Tutorial study or special research problems. May be repeated for credit as topics vary. *(On demand)*

The 5000-level courses are primarily graduate courses; however, advanced undergraduates may enroll in those courses for undergraduate credit. For complete course descriptions, see pages 383-386.

Gerontology

INTERDISCIPLINARY STUDIES

Coordinator: Professor McGavran

The Interdisciplinary Program in Gerontology is designed to provide students with academic and field experiences in the area of aging. An understanding of the basic processes of aging and of its social consequences is valuable not only for students who wish to pursue careers directly related to gerontology but also for students interested in traditional careers in other areas. As the number of older persons in our society continues to increase, it will be important for people in every occupation and profession to have a basic understanding of the aging process. The goal of the program is to provide students with that basic understanding.

Gerontology has traditionally been recognized as a multidisciplinary field. Invariably, the best research, training, and service programs in gerontology have developed when professionals from a variety of traditional academic disciplines have been afforded the opportunity to work together, each contributing a unique expertise while benefiting from the expertise of others. The minor in gerontology is built around a core sequence of interdisciplinary courses that are taught by professionals from a variety of different academic disciplines. This approach is designed to bring together information from multidisciplinary sources, integrate theoretical and applied concepts in gerontology, and communicate to students the need for a multidisciplinary approach in meeting the needs of older persons.

GERONTOLOGY MINOR

The minor in gerontology is awarded only to students completing an undergraduate major at UNC Charlotte. A total of 22 hours in gerontology courses with an overall GPA of 2.5 in those courses is required. Three interdisciplinary courses (GRNT 2100, 3100 and 3600) form the core of the gerontology sequence and are required for all students completing the minor, as are courses in the Psychology of Aging (PSYC 3124) and the Sociology of Aging (SOCY 4110). Students must also complete six hours of approved elective courses related to gerontology.

Students who have earned a bachelor's degree from UNCC may be readmitted to pursue a minor in Gerontology, just as they may be readmitted to pursue a second major. (For further information on readmission, see pages 60-61 of this catalog.)

Students who have earned a bachelor's degree from an institution other than UNCC may *not* receive a minor in Gerontology from UNCC (unless they earn a second baccalaureate degree from UNCC). Such students may request a letter from the program and/or a transcript notation which acknowledges completion of courses specified for the minor but indicates that the minor can only be awarded upon completion of the degree.

The following courses have been approved as elective courses related to gerontology. (Additional elective courses now being developed will be approved as they become available.)

ENGL 3210 Aging in Literature (3)
HIST 2000 History of Aging (3)
HUSV 3102 The Adult Years (3)
PHED 3099 Fitness and Aging (3)
PHIL 3201 or RELS 3201 The Meaning of Death (3)
PHIL 3228 Biomedical Ethics (3)
PSYC 3001 The Older Worker (3)
SOWK 4100 Ethnicity and Aging (3)
SOWK 4101 Social Work Practice with the Elderly (3)

In addition, any *one* of the following may be applied toward the six-hour requirement:

EDUC 2150 Human Development Across the Life Span (3)
HUSV 1100 Exploration of Human Development (3)
NURS 1100 Growth and Development (3)
SOWK 2182 Human Behavior and the Social Environment I (3)

GERONTOLOGY (GRNT) COURSE DESCRIPTIONS

GRNT 2100. Introduction to Gerontology. (C) (3) An interdisciplinary team-taught course that examines the phenomenon of aging and its consequences for society from a variety of perspectives. Students participate in lectures, discussions and meetings with community-based professionals designed to give them a broad overview of the field of gerontology. Emphasis on the wide variation in the aging process and the significant programs and services designed to meet the needs of the aging population. *(Yearly)*

GRNT 3050. Topics in Gerontology. (3) Investigation of specific issues in gerontology, either from the perspective of a single discipline or from a multidisciplinary perspective. May be repeated for credit as topics vary. *(On demand)*

GRNT 3100. Health and the Aging Process. (3) Prerequisite: GRNT 2100. A team-taught course that examines the physiologic processes of aging as a normal life experience. Study of psychological, nutritional and general health issues designed to facilitate high-level wellness. *(Yearly)*

GRNT 3600. Senior Seminar and Field Experience in Aging. (4) Prerequisites: completion of 15 hours in Gerontology curriculum including GRNT 2100, GRNT 3100, PSYC 3124 and SOCY 4110. Capstone course for the concentration in Gerontology designed to help students apply theories, research methods, and specific intervention strategies to substantive issues, and critically examine the organizational structure of aging programs and policies. Two seminar hours and six field placement hours per week. *(Yearly)*

GRNT 3800. Individual Study in Gerontology. (3) Prerequisite: permission of the instructor and the gerontology program coordinator. Supervised individual study and/or field-based experience in a topic or area of gerontology of particular interest to the student. May be repeated for credit. *(Fall)*

PSYC 3124. Psychology of Adult Development and Aging. (3) Prerequisites: PSYC 2120 or PSYC 2121, or equivalent. Psychological development through adulthood and old age. Emphasis on processes underlying continuity and change in adulthood, including personality and socialization, cognitive development and the psychophysiology of aging. *(Yearly)*

SOCY 4110. Sociology of Aging. (3) (3G) Prerequisite: SOCY 1101 or consent of the instructor. Changing characteristics, aspirations and needs of older adults and their impact upon such institutions as the family, work, the economy, politics, education and health care; emphasis on sociological theories of aging, contemporary research, and the analysis of specific aging policies and programs. *(Fall, Summer) (Evenings)*

Department of History

Chairperson: Professor Blackwelder; *Professors:* Johnson, Josephson, Morrill, Patterson, Perzel; *Robert Lee Bailey Professor:* Goldfield; *Professor Emeritus:* Rieke; *Associate Professors:* Haber, Laurent; *Assistant Professors:* Ben-Ghiat, Clark, Dodgen, Dupree, Gordon, Hendricks, Kierner, Smail, Usselman; *Lecturer:* Lee; *Part-Time Lecturer:* Starnes

History is the broadest and most integrative of all disciplines concerned with human beings and society. Today's historians use the research tools of the social sciences to understand and explain major events and changes in human experience over time. Yet history has always been considered one of the humanities, and it remains so because historians are concerned with issues of value and meaning, with the significance that historical events had for the lives of individuals and groups. Students of history gain an understanding of people, groups and society and a sensitivity both to detailed research and the "big picture." Through the study of history, students can become better prepared for life in a rapidly changing world and a rapidly evolving economy.

Professions like law and medicine have always considered history an ideal undergraduate major because it emphasizes the essential intellectual skills: critical thinking, research, writing and speaking. For these reasons history also remains a sound preparation for almost any undergraduate and a good choice for the typical student in America, who graduates with a basic education rather than a specific job training. Most history majors, like other majors in the arts and sciences, go into a wide variety of jobs in the business world—from sales or communications to research and administration. The most popular history-related field that majors enter is teaching, and the Department of History offers teacher-certification programs at all levels in cooperation with the College of Education and Allied Professions. Other opportunities for training in history-related fields are available as well. Members of the faculty have expertise and offer courses in historic preservation, local history, and other aspects of public history. Through the master's program history majors can pursue their interests at the graduate level. (See *The Graduate School* section of this *Catalog*).

Study Abroad. Arrangements can be made for study abroad in Asia, Africa, Europe, Latin America or Canada.

BACHELOR OF ARTS

A major in history leading to the B.A. degree, except for students in a teaching certificate program, consists of 30 hours of history, including HIST 1120, 1121 and 2100, and at least six hours in any of the following areas: Asian History, African History or Latin American History. Three semester hours must be taken at the 4000 level. HIST 1100 does not count toward fulfillment of major requirements. The student must achieve a minimum GPA of 2.0 in all history courses.

TEACHER CERTIFICATION

Teacher certification candidates must complete the basic requirements for the major. At least three semester hours must be in American history.

For secondary teacher certification, students must complete 21 hours of related work distributed among three of the social sciences (Anthropology, Economics, Geography, Political Science and Sociology), this qualifies the student for certification in social sciences. Curricula for teacher certification must be in accordance with the curriculum of the College of Education and Allied Professions. In addition, the candidate for secondary certification must fulfill the requirements of the North Carolina Department of Public Instruction.

For **intermediate teacher certification,** related work must be consistent with the State guidelines for intermediate certification. Curricula for teacher certification candidates must be in accordance with the curriculum of the College of Education and Allied Professions.

HISTORY MINOR

A minor in History consists of 18 semester hours including HIST 1121; no more than six additional hours at the 1000 level; and at least nine semester hours selected from courses above the 1000 level. The student must achieve a minimum grade point average of 2.0 in all history courses.

HONORS PROGRAM IN HISTORY

The Department of History offers an honors program as well as individual honors courses. Both history majors and non-majors are welcome to participate.

Admission. Students or faculty may initiate applications for admission to the History Honors Program. Admission into the program is not final until both the Department Honors Committee and the University Honors Council approve the student for candidacy.

Courses. Honors sections of various courses are offered in addition to the honors thesis course.

Certification Requirements. To successfully complete the History Honors Program a student must complete three history honors courses—one in historical methods, one in research design and the honors thesis course. Students must have a GPA of 3.5 in all history courses completed and an overall GPA of 3.0.

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

HIST 1120	3	HIST 1121	3
ENGL 1101 (Goal I)	3	ENGL 1102 (Goal I)	3
MATH 1100 or 1101 (Goal II)	3	MATH 1102 (Goal II)	3
FORL Proficiency	4	FORL Proficiency	4
Elective	3	Elective	3

Sophomore Year

HIST 2100	3	HIST (Non-western)	3
HIST (Non-western)	3	HIST (1000 or 2000)	3
GOAL IV (S)	4	GOAL I (W)	3
GOAL III (V)	3	GOAL IV (S)	4
Elective	3	Elective	3

Junior Year

HIST 2000 or 3000	3	HIST 2000 or 3000	3
HIST 1100 (Goal VI-X)	3*	GOAL V (A)	3
Electives	10	GOAL V (L)	3
		Electives	6

Senior Year

HIST 4000	3	GOAL I (W)	3
GOAL VI (C)	3	History 2000 or 3000	3
Electives	9	Electives	9

**Note: HIST 1100 does not count toward History major.*

HISTORY (HIST) COURSE DESCRIPTIONS

HIST 1100. The World in the 20th Century. (VX) (3) Outstanding recent world developments in an historical context. (Does *not* count toward fulfillment of major requirements.) *(Fall, Spring)*

HIST 1120. European History to 1660. (X) (3) Political and cultural developments of Western Europe from the fourth century A.D. to the Age of Absolutism. *(Fall, Spring, Summer) (Evenings)*

HIST 1121. European History Since 1660. (X) (3) European history from the Age of Absolutism to the present. *(Fall, Spring, Summer) (Evenings)*

HIST 1160. U.S. History I. (C) (3) American history from the earliest times to 1865. *(Fall, Spring, Summer) (Evenings)*

HIST 1161. U.S. History II. (C) (3) American history from 1865 to the present. *(Fall, Spring, Summer) (Evenings)*

HIST 2000. Topics in History. (3) Treatment of an historical topic. May be repeated for credit as topics vary. *(Yearly)*

HIST 2100. Introduction to Historical Studies. (V) (3) A writing-intensive experience involving primary and secondary sources, library research, historical evidence, citation, rhetoric and modern methodology. *(Fall, Spring)*

HIST 2101. American Business History. (3) A survey of the origins, methods, and goals of modern business enterprise. Lectures emphasize the social history of the American business community and the relation between public policy and economic growth. Discussion emphasizes current economic problems and policies. *(Spring)*

HIST 2110. Technology and Science in Society I: To 1776. (3) The history of science and technology up to the British industrial revolution of the 18th century. The impact of scientific and technological change on Western societies and societal influence on the development of science and technology. Scientific and technical background is not a prerequisite. *(Fall)*

HIST 2111. Technology and Science in Society II: Since 1776. (VC) (3) The history of science and technology in Western society since the industrial revolution of the 18th century. The interconnections of science and technology with society, with particular emphasis on the United States. Designed for all students, regardless of scientific and technical background. *(Spring)*

HIST 2120. American Military History. (3) A survey of the development and organization of military practice from the colonial period to the present. *(Spring)*

HIST 2130. Introduction to Historic Preservation. (3) Techniques available in the United States to identify and preserve historically significant structures, buildings, sites, areas and objects. *(Fall)*

HIST 2140. Disease and Medicine in History. (3) Development of medical knowledge, trends in the techniques and availability of medical and psychiatric care, and the impact of disease and medicine on selected problems in world history. *(Spring)*

HIST 2141. American Medical History. (C) (3) History of American medicine and the relationship between medical thought and changing cultural beliefs. *(Fall)*

HIST 2150. History of Women in the U.S. (3) Changing experience, status and role of women from colonial times to the present. *(On demand)*

HIST 2200. Asian Civilization. (L) (3) An investigation of the philosophical, religious, social, political and economic foundations of the great Asian civilizations. Emphasis will be placed on understanding those traditions that influence Asian societies today and a comparison of those traditions to Western traditions. *(Fall)*

HIST 2201. History of Modern Asia. (3) Focus on the rise of modern Asia from the period just prior to the armed intervention of Western European nations. Emphasis will be placed on the impact of imperialism, colonialism and the rise of Asian nationalism on Asian societies. *(Spring)*

HIST 2205. Introduction to Latin American History. (X) (3) Cultural, political and economic developments in Latin America. *(Yearly)*

HIST 2210. Pre-Colonial Africa. (3) A survey of major political, economic and religious developments in Sub-Saharan Africa from earliest times to the early 19th century. *(Fall)*

HIST 2211. Modern Africa. (3) A survey of major developments in 19th and 20th century Sub-Saharan Africa, with emphasis on the European conquest, the colonial period, and the triumph of modern African nationalism. *(Spring)*

HIST 2250. Russian History from Earliest Times to 1801. (3) Development of the Russian people, focusing upon the rise and fall of the Kievan state, the impact of the period of Tartar domination, the rise of Moscovy, and the growth of the Tsarist autocracy before the reign of Alexander I. *(Alternate years)*

HIST 2251. Russian History from 1801 to 1917. (3) Decline and fall of the Tsarist empire, focusing upon the efforts of the last four rulers to perpetuate the monarchy and upon the factors working against the effort. *(Alternate years)*

HIST 2252. Russian History from 1917 to the Present. (3) Development of Soviet Russia, focusing upon the October 1917 Revolution, Lenin's years of rule, Stalin's rise to power, the Five Year Plan and the years since World War II. *(Alternate years)*

HIST 2260. Britain to 1688. (3) British history with emphasis on institutional, cultural, economic and imperial developments. *(Alternate years)*

HIST 2261. Britain since 1688. (3) Continuation of HIST 2260 with some treatment of the British Empire. *(Alternate years)*

HIST 2270. France, 1643-1815. (3) A survey from the development of royal absolutism to the French Revolution and Napoleonic conquests. *(Alternate years)*

HIST 2271. France, 1815 to the Present. (3) A study of France through the period of the Paris Commune, the two World Wars, and the current crisis of the modern world. *(Alternate years)*

HIST 2280. The Emergence of Modern Germany. (3) A political survey to the mid-19th century, emphasizing the dual role of Prussia and Austria in the German world. *(Alternate years)*

HIST 2281. Twentieth Century Germany. (3) The Wilhelmine Empire, the Wiemar Republic, the Third Reich and the two Germanies. *(Alternate years)*

HIST 2400. History Internship. (1-3) Applied historical techniques utilizing modern methodology and experiences in off-campus institutions or on historical sites. May be repeated for credit. *(On demand)*

HIST 2700. Honors in History. (3) Prerequisite: consent of instructor. Treatment of historical topic. May be repeated for credit as topics vary. *(On demand)*

Courses for Advanced Undergraduates

HIST 3000. Topics in History. (3) Treatment of historical topic. May be repeated for credit as topics vary. *(Yearly)*

HIST 3101. History of Greece. (3) From the beginning of civilization in Greece to 332 B.C. *(Alternate years)*

HIST 3102. History of Rome. (LA) (3) From the beginning of civilization in Italy to 284 A.D. *(Alternate years)*

HIST 3105. Early Middle Ages, 300 A.D.-1100 A.D. (LA) (3) Europe from the decline of the Roman Empire to the 12th century; spread of Christianity, the Frankish Monarchy, and the Crusades. *(Alternate years)*

HIST 3106. The High and Later Middle Ages, 1000 A.D.-1400 A.D. (LX) (3) The revival of towns, growth of centralized monarchies, and the Black Death and its consequences. *(Yearly)*

HIST 3107. Renaissance Europe. (LA) (3) Social, economic and political consequences of the Cultural awakening in Italy. *(Yearly)*

HIST 3108. Reformation Europe 1400-1650. (3) The Protestant Reformation and its impact on Western Europe. *(Alternate years)*

HIST 3108. Reformation Europe 1400-1650. (3) The Protestant Reformation and its impact on Western Europe. *(Alternate years)*

HIST 3110. The European World in the Era of the French Revolution. (3) The role of the Enlightenment, the French Revolution and Napoleon in the destruction of the Old Regime and the creation of modern political and social traditions. *(Alternate years)*

HIST 3115. Nineteenth Century Europe, 1814-1914. (3) Political developments in European history from the Congress of Vienna: liberalism, nationalism, imperialism and the diplomacy leading to World War I. *(Alternate years)*

HIST 3116. Twentieth Century Europe, 1914 to the Present. (3) Causes and results of World War I, rise of new governments, collapse of collective security, World War II and the postwar period. *(Alternate years)*

HIST 3130. History of Socialism and Communism. (3) Socialism before the establishment of the First International, followed by analysis of the socialist and communist movements until the present. *(Alternate years)*

HIST 3134. European Intellectual History Since 1789. (3) Leading thinkers in the development of philosophic, scientific and political thought. *(Alternate years)*

HIST 3141. World War I. (3) World War I from the outbreak of hostilities to the peace settlement. Impact on the combatant nations and subsequent development of the World. *(Yearly)*

HIST 3142. A Military History of World War II. (3) Major campaigns of World War II with emphasis upon the European theater of operations. *(Yearly)*

HIST 3143. World War II: The Pacific Theater. (3) A description and analytical survey of the military campaigns in the Pacific theater of operations. *(Yearly)*

HIST 3147. The Third Reich. (3) The origins of Nazism, the seizure of power, Hitler's domestic and foreign policy, and the collapse in World War II. *(Yearly)*

HIST 3151. South Africa. (3) Population groups of South Africa from earliest times to the present. Emphasis on the assertion and maintenance of European rule in the 19th and 20th centuries. *(Yearly)*

HIST 3161. China in Revolution. (3) The last 200 years of history with emphasis on the history of the Chinese Revolution and the post-1949 developments. *(Alternate years)*

HIST 3165. History of Modern Japan. (3) Japan from about 1600 to the present covering Japan's intellectual, social and economic transformation from an agricultural society to an industrial power. *(Alternate years)*

HIST 3169. The West in Asia: Imperialism, Colonialism and Modern Nationalism. (3) Western expansion in Asia beginning with the East India companies with concentration on modern imperialism in the 19th and 20th centuries. *(Alternate years)*

HIST 3170. Vietnam: A Century of Conflict. (3) Rise of Vietnamese nationalism under French rule and its growth into full-scale civil war in the years following World War II. Transition from French to American involvement in Vietnam and the consequences of that involvement for Southeast Asia, East-West relations, and U.S. politics. *(Yearly)*

HIST 3171. History of Argentina. (3) Argentine history from the late colonial period to the present. Emphasis on changes in Argentine economic and social structures and their relation to political developments. *(Alternate years)*

HIST 3176. History of Mexico. (3) A survey of Mexican history from pre-Columbian times to the present. Special emphasis will be given to the Spanish conquest, the colonial economy, the independence period, the revolution, and relations with the United States. *(Alternate years)*

HIST 3177. The Cuban Revolution. (3) An examination of the economic and political forces that led to the Cuban revolution. Significant background material from the 19th and early 20th centuries will be presented in addition to an analysis of the revolution and post-revolutionary events. *(Alternate years)*

HIST 3179. The United States and Latin America. (3) Relations between the United States and Latin America. Growth of U.S. economic and political interest in Latin America and the impact of U.S. influence in that region. *(Alternate years)*

HIST 3180. Slavery in the Americas. (3) Examines the roles of Europe, Africa, and the colonies and nations in North and South America in the international slave trade and slave system. Attention will be given to relationships among regions and cultures, effects of slavery on each region, and the development of culturally different systems of slavery in the Americas. *(Alternate years)*

HIST 3201. Colonial America. (3) Colonial history from the discoveries to 1763. *(Fall)*

HIST 3202. The American Revolution and Early Nation. (3) The achievement of independence and the formation of a national government, 1763-1800. *(Spring)*

HIST 3211. Civil War and Reconstruction, 1860-1877. (3) The American people in war and the postwar adjustment. Emphasis on the political, social and economic conditions of the North and South during the Civil War and Reconstruction period. *(Alternate years)*

HIST 3212. History of the South to 1865. (3) The South from colonial origins through the Civil War. Emphasis on the political and cultural developments which ultimately led the South to secession and the creation of a distinct Southern nation in the confederacy. *(Yearly)*

HIST 3213. History of the South since 1865. (3) Southern history from Reconstruction to the present. Emphasis on race and class relations as the South copes with change. Special attention to the Civil Rights Movement, industrialization and urbanization. *(Yearly)*

HIST 3214. The Urban South. (3) Development of the Southern city from the colonial period to the present with emphasis on the agricultural base of urban life, the biracial character, and early economic dependence upon the North. *(Alternate years)*

HIST 3215. Southerners. (W) (3) Prerequisites: ENGL 1101 and 1102. A writing-intensive course that explores the distinctive characteristics of Southerners through study of biographies and autobiographies. The varied backgrounds of Southerners and selected Americans from other regions will be studied. *(Alternate years)*

HIST 3241. United States Social History to 1860. (C) (3) Ideas, groups and institutions that shaped early America, with emphasis upon the changes in family, religion, community and class. *(Alternate years)*

HIST 3242. United States Social History since 1860. (3) Ideas, groups and institutions that evolved from the Civil War to the present, with emphasis upon the formation of modern-day American society. *(Alternate years)*

HIST 3250. The Gilded Age: The United States 1877-1901. (3) An intensive study of the making and meaning of a modern industrial society in the U.S. Emphasis is on cultural and political developments in the emerging "machine age." *(Yearly)*

HIST 3251. United States in the 20th Century, 1901-1932. (3) Political, economic, social and intellectual aspects of American democracy from 1901 to the Great Depression. Special emphasis on the impact of industrialization, American reform and the entry of the United States into the international arena. *(Fall)*

HIST 3252. United States in the 20th Century, 1932-Present. (3) Political, economic, social and intellectual aspects of American democracy from the New Deal to the Great Society. Special emphasis on the New Deal and post-New Deal reform as well as America's role in world affairs. *(Spring)*

HIST 3256. United States Foreign Relations, 1901 to the Present. (3) American diplomatic history from the administration of Theodore Roosevelt to the present. Special emphasis on the interaction between domestic, economic, political and social changes and the formulation of American foreign policy. *(Alternate years)*

HIST 3259. Radicalism and Reform in the U.S. (3) Radical and reform efforts from the Revolutionary War to the present. Emphasis on the development of the radical and reform traditions and their interaction through two centuries of American history. *(Yearly)*

HIST 3261. The Civil Rights Era. (3) Examination of the struggle for racial equality, particularly in the South, from World War II through the 1960's emphasizing the nature and tactics of black leadership, white resistance, federal involvement, results, and the unfinished agenda. *(Spring)*

HIST 3281. American Cities. (3) U.S. urban history. The city as a physical place, as a socio-political environment and as a cultural center. Emphasis on the social developments caused by urbanization. *(Alternate years)*

HIST 3284. Crime and the Police. (3) Historical development of criminal behavior, criminal law, the criminal courts, the police and the penitentiary system. *(Alternate years)*

HIST 3288. The Frontier in United States History. (3) Influence of the frontier on the historical development of the U.S. Emphasis on the trans-Mississippi Western United States. *(Alternate years)*

HIST 3295. History of North Carolina to 1865. (3) Emphasis on the colonial and on the constitutional, educational and economic developments of the antebellum period. *(Fall) (Evenings)*

HIST 3296. History of North Carolina Since 1865. (3) Social, political and economic changes that have made modern North Carolina. *(Spring) (Evenings)*

HIST 3700. Honors in History. (W) (3) Prerequisite: consent of instructor. Treatment of historical topic. May be repeated for credit as topics vary. *(Yearly)*

HIST 3799. Senior Honors Thesis. (3) Prerequisite: consent of the instructor. The preparation and presentation of an acceptable honors thesis or its equivalent. *(On demand)*

HIST 3800. Independent Projects in History. (3) Prerequisite: consent of instructor. Individual research or readings on an historical topic. May be repeated for credit with consent of the coordinator or instructor. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

HIST 4000. Problems in American History. (W) (3) (3G) Prerequisite: HIST 2100 or permission of the Department. A colloquium designed around a problem in American history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Fall, Spring) (Evenings)*

HIST 4001. Problems in European History. (W) (3) (3G) Prerequisites: HIST 2100 or permission of the Department. A colloquium designed around a problem in European history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Yearly, Summer) (Evenings)*

HIST 4002. Problems in Non-Western History. (W) (3) (3G) Prerequisite: HIST 2100 or permission of the Department. A colloquium designed around a problem in non-Western history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

HIST 4100. The Nature of Historical Study. (3) (3G) The historian and the historian's resuppositions, methods and objectives, and their impact on the development of historical literature. *(Alternate years)*

Department of Mathematics

Chairperson: Professor Quinn; *Coordinator of Freshman Studies:* Professor Nixon; *Coordinator of Undergraduate Program:* Professor Houston; *Professors:* Goodrum, Lambert, Leiva, T.R. Lucas, Nixon, Papadopoulos, Quinn, Rozovsky, Solian, Stavrakas, Weinstock, Yushkevich, Zhu; *Associate Professors:* Anderson, Avrin, Burnap, Chen, Johnson, Kazemi, Klibanov, T.G. Lucas, Oh, Reiter, Rothe, Royster, Shafer, Tiwari, Wichnoski, Wihstutz; *Assistant Professors:* Cai, Hoekstra, Norman, Prichard, Roth, Singh, Stewart, Willis, Wright, Zhang; *Lecturers:* Orinson, Priebe, N. Royster, Schoeps

Mathematics has important applications to numerous areas ranging from economics and other social sciences to physics and engineering. It is a challenging and interesting area to study in its own right with a broad and varied curriculum.

The Department offers majors leading to the B.S. and B.A. degrees and a minor in mathematics. Students considering a major in mathematics should take at least four years of high school mathematics, including at least one year beyond Algebra II. (Only well-prepared students will be permitted to enroll in MATH 1141 without first taking MATH 1103.) While excessive specialization at the undergraduate level is not encouraged, students may choose their upper-division mathematics electives to emphasize statistics, operations research or applied mathematics. Students graduating with a bachelor's degree in mathematics should find themselves well prepared for a career in business or industry, especially if they have chosen to concentrate on some of the more

applied areas in the program and have selected a minor concentration in an area of application such as economics, business or computer science. Students preparing for careers in industry or business should consider participating in the Department's Cooperative Education Program. Students completing the B.S. curriculum will be well prepared for graduate work in the mathematical sciences.

At the graduate level, the Department offers programs leading to the M.A. degree in mathematics and in mathematics education and the M.S. degree in Applied Mathematics. The M.A. degree in mathematics develops breadth and depth in the field and provides preparation for careers in industry, and teaching at junior or community colleges and for further study at the doctoral level. The M.A. degree in mathematics education provides career advancement opportunities for teachers, preparation for junior or community college teaching, or further work at the doctoral level in mathematics education. The M.S. degree in applied mathematics provides advanced work in the techniques of mathematical analysis and their application to the problems of industry and technology. (See *The Graduate School* section of this *Catalog.*)

Teacher Certification in Mathematics. Students preparing for certification to teach mathematics in secondary school (grades 9-12) will major in mathematics and should follow the suggested curriculum on the following page.

BACHELOR OF ARTS

A major in mathematics for the B.A. degree consists of a minimum of 33 hours of approved mathematics, operations research or statistics courses, including MATH 1141, 1142, 2141, 2164, 2171 and 3163; 12 hours of approved courses numbered 3000 or above (exclusive of MATH 3163); and MATH 3688 and 3689.

A major in mathematics also requires CSCI 1100 and an elective minor consisting of at least 18 hours of approved courses in an area outside the Mathematics Department. All students must meet the general education requirements of The University.

BACHELOR OF SCIENCE

A major in mathematics for the B.S. degree consists of a minimum of 39 semester hours of approved mathematics courses. In addition to the requirements for the B.A. degree, the major in mathematics for the B.S. degree requires completing six additional hours of approved mathematics, operations research or statistics courses numbered 3000 or above (exclusive of MATH 3163) including MATH 3141, 3142, and at least one course from among STAT 3123 and MATH 4163, 4164, 4181 and 5143; as well as a minimum of 11 hours of science courses.

Note: Students applying for either the B.A. or B.S. degree in mathematics must have a grade point average of at least 2.0 in each of the following categories: (1) all courses applied toward the degree, (2) all mathematics courses applied toward the degree or numbered above 2000, and (3) all upper-division mathematics courses taken.

MATHEMATICS MINOR

A minor in mathematics requires MATH 1141, 1142, and 2164; one additional three-hour MATH, STAT, or OPRS course numbered 2000 or above; two additional three-hour MATH, STAT, or OPRS courses numbered 3000 or above; and a minimum GPA of 2.0 in each of the following categories: (a) all MATH, STAT, and OPRS courses taken and (b) all MATH, STAT, and OPRS courses numbered 2000 or above.

HONORS PROGRAM IN MATHEMATICS

The purpose of the honors program in mathematics is to stimulate the imagination and deepen the understanding of students by encouraging independent study, and to provide recognition of exceptional achievements in mathematics. Students who complete the requirements of the program graduate with honors in mathematics.

Admission. Entrance to the Mathematics Department Honors Program is granted by the Mathematics Honors Committee, based on the following minimum requirements: (1) junior or senior standing; (2) at least 20 hours in mathematics, including MATH 1141, 1142, 2141, 2171, 2164 and 3163; and (3) a grade point average of not less than 3.0 in mathematics courses and in all University courses.

Students must apply to the Mathematics Honors Committee for admission to the program, and if admitted, must select a mathematics faculty member who is willing to serve as an honors adviser. The Honors Committee recommends students admitted to the program to the University Honors Council for formal admission to honors candidacy. (In order to graduate with honors The University requires that students be admitted to honors candidacy at least two semesters before graduation.)

Courses. A Junior Honors Seminar (MATH 3790) and a Senior Honors Tutorial (MATH 3791) are offered, both of which may be repeated for credit.

Honors Calculus Course. While admission to the Honors Program requires junior or senior standing, a two-semester Honors Calculus sequence is available to promising freshmen and sophomores. For more information, contact the Department of Mathematics.

Certification Requirements. The requirements for graduation with honors are: (1) completion of all requirements for a Bachelor of Science degree in mathematics with a grade point average of 3.00 or better; (2) a grade point average of 3.25 or better in all mathematics, operations research or statistics courses, and a GPA of 3.5 or better in all mathematics honors courses; (3) completion of at least six hours of Senior Honors Tutorial (MATH 3791) with a GPA of 3.5 or better, culminating in an honors thesis approved by the Mathematics Honors Committee; and (4) recommendation by the Mathematics Honors Committee to the University Honors Council that the student graduate with honors.

Either the student or the Department may withdraw the student from the Department Honors Program. If the date for dropping courses has passed when the student leaves the program, the student must complete any courses currently in progress in order to receive passing grades in the courses.

COOPERATIVE EDUCATION PROGRAM

A student may participate in the Mathematics Cooperative Education Program in either the parallel or alternate track. The parallel track combines academic study and cooperative experience during the same semester while the alternate track alternates semesters totally devoted to work with semesters totally devoted to academic study. Students in the Mathematics Cooperative Education Program must participate in a minimum of two semesters in the program. Students interested in participating in the program should contact the Coordinator of Cooperative Education, Department of Mathematics, for further information.

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

MATH 1141	4	MATH 1142	4
ENGL 1101	3	ENGL 1102	3
GOAL VI	3	CSCI 1100	3
Language (or Elective)	3-4	Language (or Elective)	3-4

Sophomore Year

MATH 2141	3	MATH 2171	3
MATH 2164	3	Elective	3
GOAL V	3	GOAL I: (W)	3
Laboratory Science	4	Laboratory Science	4
Minor	3	Minor	3

Junior Year

MATH 3688	0	MATH 3xxx or 4xxx	3
MATH 3xxx or 4xxx	3	Minor	3
Minor	3	GOAL III	3
GOAL VI	3	GOAL V	3
MATH 3163 (W)	3	Elective	3
Laboratory Science	3-4		

Senior Year

MATH 3xxx or 4xxx	3	MATH 3xxx or 4xxx	3
Minor	3	MATH 3689	1
Electives	9	Minor	3
		Electives	10

Note: Total credits must equal at least 120.

SUGGESTED SCHEDULE: B.S. DEGREE

Freshman Year

MATH 1141 4	MATH 1142 4
ENGL 1101 3	ENGL 1102 3
GOAL VI 3	CSCI 1100 3
Language (or Elective) 3-4	Language (or Elective) 3-4

Sophomore Year

MATH 2141 3	MATH 2171 3
MATH 2164 3	Elective 3
GOAL V 3	GOAL I: (W) 3
Laboratory Science 4	Laboratory Science 4
Minor 3	Minor 3

Junior Year

MATH 3141 3	MATH 3142 3
MATH 3688 0	Minor 3
Laboratory Science 3-4	GOAL III 3
GOAL VI 3	GOAL V 3
Minor 3	Elective 3
MATH 3163 (W) 3	

Senior Year

MATH 3xxx or 4xxx 6	MATH 3689 1
*MATH 3xxx or 4xxx 6	Minor 3
Minor 3	Electives 3-7
Electives 6	

*At least one three-hour course to be selected from 3123, 4163, 4164, 4181 and 5143.

Note: Total credits must equal at least 120.

SUGGESTED SCHEDULE: MATHEMATICS EDUCATION

Freshman Year

ENGL 1101	3	ENGL 1102	3
MATH 1141	4	MATH 1142	4
PSYC 1101 (GOAL VI: C)	3	CSCI 1100 (Pascal)	3
Language (or Elective)	3	Language (or Elective)	3
GOAL III	3	GOAL VI	3

Sophomore Year

MATH 2141	3	MATH 2171	3
EDUC 2100	3	MAED 3103	3
PSYC 2109	3	Laboratory Science (GOAL IV)	4
Laboratory Science (GOAL IV)	4	GOAL V: Literature	3
GOAL V: Arts	3	Education 2110	3

Junior Year

MATH 3688	0	MATH 3181	3
MATH 4109	3	MATH 3163 (GOAL I: W)	3
MATH 2164	3	MATH 5122	3
EDUC 3120	3	EDUC 3195	3
HLED 2200	3	SPED 3160	3
MAED 3105	3		

Senior Year

MATH 3689	1	EDUC 3490 (Internship)	12
MAED 5171	3		
EDUC 3196	3		
READ 5250 (GOAL VI: X)	3		
MATH 3xxx or 4xxx	3		
Elective	3		

Note: Total credits must equal at least 120. If the Lab Sciences are not a sequenced pair, such as CHEM 1101 and 1102, then three courses (12 hours) must be taken instead of the two courses (8 hours).

MATHEMATICS (MATH) COURSE DESCRIPTIONS

Courses for Undergraduates

All mathematics and statistics courses are approved to satisfy requirements for the Problem Solving Goal of UNCC Education.

MATH 1050. Introductory Topics in Mathematics. (1-3) Prerequisite: consent of the Department. Topics in introductory mathematics not included in the regular course offering. (May be repeated for additional credit as topics vary and with the approval of the Department.) *(On demand)*

MATH 1100. College Algebra and Probability. (3) Prerequisite: Appropriate score on the Mathematics Placement Test or placement by the Department. The basic mathematics course for all undergraduates who are not majoring in mathematics, engineering, or the physical sciences. Fundamental concepts of algebra, matrices, and probability are presented and the skills requisite for dealing with the content are developed. (Credit may not be given for both MATH 1100 and 1103.) (Students who received credit for MATH 1101 between Fall 1987 and Fall 1989 may not take 1100 for credit.) *(Fall, Spring, Summer) (Evenings)*

MATH 1102. Introduction to Mathematical Thinking. (3) Prerequisite: Appropriate score on the Mathematics Placement Test or placement by the Department. An introduction to mathematical ideas designed primarily for non-science students. Topics are drawn from various branches of mathematics which may include algebra, geometry, number theory, probability, statistics and graph theory. Computers may be used. *(Fall, Spring)*

MATH 1103. Precalculus Mathematics for Science and Engineering. (3) Prerequisite: Appropriate score on the Mathematics Placement Test or placement by the Department. Intended for students who plan to take MATH 1141. Functions and graphs, linear and quadratic functions, polynomial and rational functions, exponential and logarithmic functions, trigonometric identities. (Credit may not be given for both MATH 1100 and 1103.) (Students who received credit for MATH 1101 between Fall 1987 and Fall 1989 may not take MATH 1103 for credit.) *(Fall, Spring, Summer) (Evenings)*

MATH 1104. Concepts of Trigonometry. (1) Prerequisite: Appropriate score on the Mathematics Placement Test or placement by the Department. Trigonometric functions and their graphs, trigonometric identities. (Credit not given for both Mathematics 1103 and 1104.) *(Fall)*

MATH 1105. Finite Mathematics. (3) Prerequisite: Appropriate score on the Mathematics Placement Test or placement by the Department. Review of high school algebra, elementary matrix algebra, systems of linear equations and inequalities, elementary linear programming; probability. *(On demand)*

MATH 1120. Calculus. (3) Prerequisite: Appropriate score on the Mathematics Placement Test; MATH 1100, 1101, or 1103; or placement by the Department. Intended for students majoring in fields other than engineering, mathematics or science. Elements of differential and integral calculus for polynomial, rational, exponential, logarithmic and trigonometric functions, with applications to business and the social and life sciences. (May not be taken for credit if credit has been received for MATH 1121 or 1141.) *(Fall, Spring, Summer) (Evenings)*

MATH 1121. Calculus (ET). (3) Prerequisite: Appropriate score on the Mathematics Placement Test; MATH 1100, 1101 or 1103; or placement by the Department. Intended for students majoring in engineering technology. Elements of differential and integral calculus for polynomial, rational, exponential, logarathmic and trigonometric functions, with applications to engineering. May not be taken for credit if credit has been received for MATH 1120 or 1141. *(Fall, Spring)*

MATH 1141. Differential and Integral Calculus I. (4) Prerequisite: Appropriate score on the Mathematics Placement Test; MATH 1103 with a grade of *C* or better; or placement by the Department. Limits, continuity, differentiation and integration of rational, trigonometric functions, curve sketching, maxima and minima area applications of the integral. *(Fall, Spring, Summer) (Evenings)*

MATH 1142. Differential and Integral Calculus II. (4) Prerequisite: MATH 1141 with a grade of *C* or better. Exponential and logarithmic functions, methods of integration; improper integrals, L'Hopital's rule, infinite series; conic sections; hyperbolic functions. *(Fall, Spring, Summer) (Evenings)*

MATH 1165. Introduction to Discrete Structures. (3) Prerequisite: CSCI 1100. Topics include: propositions and truth tables, sets, permutations and combinations, relations and functions, lattices, and trees. Credit will not be given for both MATH 1165 and MATH 2165. *(Fall, Spring, Summer) (Evenings)*

MATH 2050. Topics in Mathematics. (2-3) Prerequisite: consent of the Department. Topics in mathematics elected to supplement regular offerings at the 2000 level. (May or may not count for a Math core course for the CSCI major.) May be repeated for additional credit as topics vary and with the approval of the Department. *(On demand)*

MATH 2121. Introduction to Probability. (3) Prerequisite: MATH 1100 or 1103. Discrete sample spaces, probability, conditional probability, independent events, random variables, mean, variance, joint probability functions, independent random variables, covariance, correlation, binomial distribution. *(On demand)*

MATH 2141. Differential and Integral Calculus III. (3) Prerequisite: MATH 1142 with a grade of *C* or better. Polar coordinates, parametric equations, vectors in two and three dimensions, quadric surfaces, partial derivatives, multiple integrals, line integrals. *(Fall, Spring, Summer) (Evenings)*

MATH 2164. Matrices and Linear Algebra. (3) Prerequisite: MATH 1120 or 1141 with a grade of *C* or better or consent of the Department. Matrix algebra, systems of linear equations, vector spaces, linear transformations, inner products, determinants, eigenvalues. *(Fall, Spring, Summer) (Evenings)*

MATH 2165. Discrete Structures. (3) Prerequisite: MATH 2164. A study of discrete mathematical structures including groups, lattices, Boolean functions, graphs and trees with applications to computer science. *(Fall, Spring, Summer) (Evenings)*

MATH 2171. Differential Equations. (3) Prerequisite: MATH 1142 with a grade of *C* or better. An introduction to ordinary differential equations including first order equations, general theory of linear equations, series solutions, special solutions, special equations such as Bessel's equation, and applications to physical and geometric problems. *(Fall, Spring, Summer) (Evenings)*

MATH 3050. Selected Topics in Mathematics. (2-3) Prerequisite: consent of the Department. Topics selected to supplement regular offerings at the 3000 level in mathematics or statistics. May be repeated for credit with the approval of the Department. *(On demand)*

MATH 3116. Graph Theory. (3) Prerequisite: MATH 2164 or 2165 or consent of the Department. Graphs as mathematical models. Planarity, colorability, connectivity, trees. Applications and algorithms for networks, matching problems and areas of computer science. *(Fall) (Alternate years)*

MATH 3122. Probability and Statistics I. (3) Prerequisite: MATH 2141 with a grade of *C* or better. Sample spaces, random variables, moment generating functions, some standard distributions, multivariate distributions, laws of large numbers, limit theorems. *(Fall) (Evenings)*

MATH 3123. Probability and Statistics II. (3) Prerequisite: MATH 3122. Estimation, bias, consistency, efficiency, maximum likelihood estimates, sufficient statistics, testing, the power function, chi-square test, Kolmogorov-Smirnov test. *(Spring) (Evenings)*

MATH 3141. Advanced Calculus of One Variable. (W) (3) Prerequisites: MATH 2141 and 2164 with grades of *C* or better. Topology of the real line; continuity, uniform continuity, differentiability, integration, sequences and series of functions. *(Fall, Spring) (Evenings)*

MATH 3142. Advanced Calculus of Several Variables. (3) Prerequisite: MATH 3141. Continuity and differentiability of functions of several variables, inverse and implicit function theorems, integration, Fubini's theorem, change of variables, the classical integral theorems of Gauss, Green and Stokes and their generalizations. *(Spring) (Evenings)*

MATH 3146. Introduction to Complex Analysis. (3) Prerequisite: MATH 2141 with a grade of *C* or better. Analytic functions, complex integration, calculus of residues, conformal mapping. *(Spring) (Alternate years)*

MATH 3163. Introduction to Modern Algebra. (W) (3) Prerequisite: MATH 1141 with a grade of *C* or better or consent of the Department. Examples and elementary properties of basic algebraic structures, especially groups. The course emphasizes the writing of proofs of elementary theorems. *(Fall, Spring) (Evenings)*

MATH 3166. Combinatorics. (3) Prerequisites: MATH 2164 or 2165. Combinatorial modeling, generating functions, recurrence relations, inclusion-exclusion principle and problems from recreational mathematics. *(Spring) (Alternate years)*

MATH 3171. Applied Mathematics. (3) Prerequisites: MATH 2141 and 2171 with grades of *C* or better. Separation of variables techniques for the classical partial differential equations of mathematical physics; Fourier series; Sturm-Liouville theory. *(Fall)*

MATH 3176. Numerical Analysis. (3) Prerequisites: CSCI 1100, MATH 2141 and 2171. Numerical solution of initial value and boundary value problems in ordinary differential equations, direct and iterative methods of solving systems of equations. Selected problems will be programmed for computer solution. *(Spring) (Alternate years)*

MATH 3181. Fundamental Concepts of Geometry. (3) Prerequisite: MATH 2164. Foundatons of geometry, transformations, comparison of Euclidean and non-Euclidean geometries. *(Spring)*

MATH 3183. Intuitive Topology. (3) Prerequisite: MATH 2141. Introduction to combinatorial topology; toplogy of Euclidean space, winding number, homotopy, fundamental group. *(On demand)*

MATH 3551. Mathematics Cooperative Education Experience. (0) Prerequisites: sophomore standing, a 3.0 GPA in mathematics and consent of the Department of Mathematics. The student will be employed in a manner that affords him/her the opportunity of using and enhancing mathematical knowledge and skills through practical experience. After completing MATH 3551, the student must take MATH 3652. MATH 3551 may be repeated with consent of the Department. *(On demand)*

MATH 3652. Mathematics Cooperative Education Seminar. (1) Prerequisite: MATH 3551. The student will give an exposition of his/her work experience in MATH 3551. An exposition of underlying theoretical concepts and related ideas may also be required. *(On demand)*

MATH 3688. Mathematics Awareness Seminar. (0) Prerequisite: junior standing. Visiting speakers, discussion of job opportunities and of selected topics in mathematics. *(Fall)*

MATH 3689. Mathematics Project Seminar. (1) Prerequisite: senior standing. Oral presentation by the student on an area of mathematics or a mathematical problem. *(Fall, Spring)*

MATH 3691. Seminar. (1-6) Prerequisite: consent of the Department. Readings, study and discussion designed to develop the student's ability to study independently and to present results properly. *(On demand)*

MATH 3790. Junior Honors Seminar. (3) Prerequisite: consent of the Department. May be repeated once for additional credit with approval of the Department. *(On demand)*

MATH 3791. Senior Honors Tutorial. (3) Prerequisite: consent of the Department. Individual tutorials in which the student will pursue independent study and research in any area of mathematics under the direction of one or more faculty members. The project of the student will be planned to culminate in a research paper of original or expository nature. May be repeated for additional credit with the approval of the Department. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students

MATH 4000. Topics in Foundations or History of Mathematics. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in the foundations or the history of mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

MATH 4020. Topics in Probability and Statistics. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in probability and statistics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

MATH 4040. Topics in Analysis. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in analysis selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

MATH 4060. Topics in Algebra. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in algebra selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

MATH 4070. Topics in Applied Mathematics. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in applied mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

MATH 4080. Topics in Geometry and Topology. (3) (3G) Prerequisite: consent of the Department. Topics in geometry or topology selected as to supplement regular course offerings in this area of mathematics. May be repeated for credit with approval of the Department. Credit for M.A. degree in mathematics requires approval of the Department. *(On Demand)*

MATH 4109. History of Mathematical Thought. (3) (3G) Prerequisite: consent of the Department. A study of the development of mathematics in its historical setting from the earliest beginnings to modern times. Not approved for the M.A. in mathematics degree. *(Fall) (Evenings)*

MATH 4161. Number Theory. (3) (3G) Prerequisite: MATH 3163 with a grade of *C* or better or consent of the Department. A study of the elements of classical number theory including divisibility, congruences, diophantine equations, prime numbers and their distribution, quadratic reciprocity, number-theoretic functions, and famous unsolved problems. Not approved for the M.A. in mathematics degree. *(Fall) (Alternate years)*

MATH 4163. Modern Algebra. (3) (3G) Prerequisite: MATH 3163 or consent of the Department. Groups, rings, integral domains, fields. *(Fall) (Alternate years)*

MATH 4164. Abstract Linear Algebra. (3) (3G) Prerequisite: MATH 3163 and 2164 or consent of the Department. Vector spaces over arbitrary fields, linear transformations, canonical forms, multilinear algebra. *(Spring) (Alternate years)*

MATH 4165. Numerical Linear Algebra. (3) (3G) Prerequisites: CSCI 1100, MATH 2164 and 2171. Direct methods of solving linear systems, Gaussian elimination, triangular decomposition, condition numbers and accuracy of solutions, the algebraic eigenvalue problem, power and inverse power methods, Hessenberg form and the QR algorithm. Iterative methods for solving large sparse matrix systems, Jacobi, Seidel and SOR methods. Selected problems will be programmed for computer solution. *(Fall) (Alternate years)*

MATH 4176. Numerical Methods in Partial Differential Equations. (3) (3G) Prerequisites: CSCI 1100, MATH 2141, 2164 and 2171; all with a grade of *C* or better. The physical basis for partial differential equations of elliptic, parabolic and hyperbolic types. Finite difference methods, initial value problems, special topics. Software packages, ELL PACK, programming techniques. *(Spring) (Alternate years)*

MATH 4181. Introduction to Topology. (3) (3G) Prerequisite: MATH 2164. Topics from set theory and point set topology such as cardinality, order, topological spaces, metric spaces, separation axiom, compactness and connectedness. *(Spring) (Alternate years)*

MATH 4691. Seminar. (1-6) (1-6G) Prerequisite: consent of the Department. Individual or group investigation and exposition of selected topics in mathematics. *(On demand)*

MATH 4692. Seminar. (1-6) (1-6G) Prerequisite: consent of the Department. A continuation of MATH 4691. *(On demand)*

OPERATIONS RESEARCH (OPRS) COURSE DESCRIPTIONS

OPRS 2111. Introduction to Operations Research. (3) Prerequisite: MATH 1120 or 1141 and CSCI 1100. Modeling and graph theory with applications to linear programming, critical path analysis, transportation and allocation problems, and queueing theory. (May not be taken for credit if credit for OPRS 3111 has been given.) *(Spring) (Evenings)*

OPRS 3111. Operations Research: Deterministic Models. (3) Prerequisites: MATH 1142 and 2164. Linear, integer and dynamic programming, the simplex method, networks, PERT and CPM techniques, game theory, and applications. *(Fall, Summer) (Evenings) (Alternate Years)*

OPRS 3113. Operations Research: Probabilistic Models. (3) Prerequisite: MATH 1142, 2164, and MATH/STAT 2121 or STAT 2122 or MATH/STAT 3122, or consent of the department. Queueing models, inventory models, simulation, markov chains, decision analysis, game theory and probabilistic dynamic programming. *(Spring) (Evenings) (Alternate Years)*

OPRS 4010. Topics in Decision Mathematics. (2-3) (2-3G) Prerequisite: consent of the Department. Topics in decision mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for additional credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

OPRS 4111. Linear Programming. (3) (3G) Prerequisites: MATH 3111 and CSCI 1100. The mathematical formulation and solution of linear programming problems. Topics include: the simplex method and its variations, sensitivity and parametric analysis, duality, and applications. A project will be required for all graduate students. *(Spring)*

OPRS 4112. Non-linear Programming. (3) (3G) Prerequisite: CSCI 1100, MATH 3111 and 2141. Basic unconstrained optimization problems, search techniques, some discussion of rates of convergence and an introductioin to constrained optimization. Computer implementation and testing of optimization algorithms will be required. A project will be required of all graduate students. *(Spring)*

OPRS 4113. Game Theory. (3) (3G) Prerequisites: MATH 3111 and one of MATH 2122, 3122, or 3113. The theory of zero-sum matrix games, mini-max theorem, optimal strategies, symmetric games, economic models, infinite, separable, polynomial, multi-stage, general-sum and n-person games. A project will be required of all graduate students. *(Spring)*

OPRS 4114. Dynamic Programming. (3) (3G) Prerequisites: CSCI 1100, MATH 3111, and one of MATH 2122, 3122 or 3113. The identification of dynamic programming problems and their solution in terms of recurrence relations. Elementary path problems, resource allocation, shortest path, travelling salemen problem, discrete-time optimal control, replacement models and inventory systems. A project will be required of all graduate students. *(Spring)*

STATISTICS (STAT) COURSE DESCRIPTIONS

STAT 1220. Elements of Statistics I (BUSN). (3) Prerequisite: MATH 1100 or 1101, or placement by the department. Noncalculus based introduction to data summarization, discrete and continuous random variables (e.g., binomial, normal), sampling, central limit theorem, estimation, testing hypotheses and linear regression. The software package Minitab will be used in solving problems, using personal computers. Applications of theory will be drawn from areas related to business. May not be taken for credit if credit has been received for STAT 1221 or 1222. *(Fall, Spring, Summer) (Evenings)*

STAT 1221. Elements of Statistics I (BIOL). (3) Prerequisite: MATH 1100 or 1101, or placement by the department. Same topics as STAT 1220 with special emphasis on applications to the life sciences. May not be taken for credit if credit has been received for STAT 1220 or 1222. *(Fall, Spring, Summer) (Evenings)*

STAT 1222. Elements of Statistics I (SBS). (3) Prerequisite: MATH 1100 or 1101, or placement by the department. Same topics as STAT 1220 with special emphasis on applications to the social and behavioral sciences. May not be taken for credit if credit has been received for STAT 1220 or 1221. *(Fall, Spring, Summer) (Evenings)*

STAT 1223. Elements of Statistics II. (3) Prerequisite: STAT 1220, 1221, or 1222. A continuation of STAT 1220 or 1221 or 1222. Topics include contingency analysis, design of experiments, more on simple linear regression, and multiple regression. Computers will be used to solve some of the problems. *(Spring) (On demand)*

STAT 2121. Introduction to Probability. (3) Same as MATH 2121.

STAT 2122. Introduction to Probability. (3) Prerequisite: MATH 1141 or consent of the Department. A study of probability models, discrete and continuous random variables, inference about Bernoulli probability, inference about population mean, inference about population variance, the maximum likelihhood principle, the minimax principle, Bayes procedures and linear models. *(Fall, Spring, Summer) (Evenings)*

STAT 3122. Probability and Statistics I. (3) Same as MATH 3122.

STAT 3123. Probability and Statistics II. (3) Same as MATH 3123.

Courses at the 5000 level are primarily for graduate students. However, advanced undergraduates may also take these courses for undergraduate credit. For complete course descriptions, see pages 389-395.

MATHEMATICS EDUCATION (MAED) COURSE DESCRIPTIONS

These courses are primarily for students seeking teacher certification, certificate renewal, or certificate upgrading. None of these courses may be used to satisfy the mathematics requirements for a major in mathematics. They may be accepted as non-math electives for B.A. and B.S. degrees in mathematics and for the M.A. in mathematics education.

Courses for Undergraduates

MAED 2101. Mathematics for the Elementary School Teacher I. (4) Prerequisite: consent of the Department. An intuitive development of the real number system with emphasis on the principles of teaching and learning elementary mathematics; sets and set operations; systems of numeration; arithmetic operations. Laboratory activities and practical teaching experience in an elementary classroom. *(Fall, Spring) (Evenings)*

MAED 2102. Mathematics for the Elementary School Teacher II. (4) Prerequisite: MATH 2101 with a grade of *C* or better. Mathematical systems; the study of metric and nonmetric geometry; probability and statistics; relations, functions and their graphs. Activities and applications related to elementary and intermediate goals. Practical teaching experience in an intermediate classroom. *(Fall, Spring) (Evenings)*

MAED 2103. Teaching Problem Solving Through Computers and Calculators. (3) Prerequisite: MAED 2102 with a grade of *C* or better or consent of the Department. Problem solving in mathematics using computer and calculators in the classroom; calculators in the mathematics curriculum; microcomputer hardware and courseware in mathematics; LOGO and BASIC; data analysis, statistics and probability. *(Fall, Spring, Summer) (Evenings)*

MAED 3000. Topics in Mathematics Education, K-6. (1-6) Prerequisite: consent of the Department. Special topics in mathematics education for grades K-6. May be repeated for credit as topics vary. *(On demand)*

MAED 3040. Topics in Mathematics Education, Middle Grades. (1-6) Prerequisite: consent of the Department. Special topics in mathematics education for middle grades. May be repeated for credit as topics vary. *(On demand)*

MAED 3070. Topics in Mathematics Education, Secondary. (1-6) Prerequisite: consent of the Department. Special topics in mathematics education at the secondary level. May be repeated for credit as topics vary. *(On demand)*

MAED 3103. Computer Programming and Algorithmics in Mathematics Education. (3) Prerequisite: MAED 2102 or consent of the Department. Computer programming as a context for teaching and learning mathematics with emphasis on algorithmic processes. Topics include: introduction to microcomputers, BASIC and LOGO computer languages, pedagogical and curricular issues related to programming and algorithmics in school mathematics. *(Spring)*

MAED 3105. Teaching Geometry Through Deductive and Inductive Logic. (3) Prerequisite: MAED 2102 or consent of the Department. A study of the Euclidean postulates and theorems in 2-space and 3-space, including some non-Euclidean variations. Emphasis on methods of teaching problem solving through formal proofs, deduction and induction. *(Fall)*

MAED 3141. Algebra and Problem Solving for Middle School Teachers. (3) Prerequisites: MATH 1103 and 2102. An overview of algebra from middle grades through college with emphasis on mastering algebraic concepts, skills, and teaching techniques. Topics include: functions, analytic geometry, vectors and matrices, and field properties of the real numbers. Observations, teaching experiences, and activities in junior high school and high school algebra. *(Fall)*

Courses at the 5000 level are primarily for graduate students. However, advanced undergraduates may also take these courses for undergraduate credit. For complete course descriptions, see page 395.

Department of Music

Chairperson: Professor Dillard; *Professors Emeritus:* Appleton, Mathis; *Associate Professors:* Dailey, Harding, Mosley, Turner; *Assistant Professor:* Peterson; *Lecturer:* Danchenka

The Department of Music offers courses for majors and non-majors ranging from theory, music appreciation, private lessons (applied music), to History of Rock Music, and various jazz courses. Some specialty courses are offered, such as foreign language diction for singers, literature for the guitar, composition, and music history. Students gain performing experience through a variety of large and small ensembles, either instrumental or vocal, which are offered for academic credit.

A major in music leading to the Bachelor of Creative Arts (BCA) degree offers the student a basic education within a liberal arts context, as opposed to highly-specialized conservatory training. Some music graduates move directly into the profession as performers or teachers, but most opt for advanced training in graduate programs or apprenticeships with professional organizations. Some music majors use their undergraduate training as a foundation for other professions, such as arts management, various private businesses, or church music work.

All music courses and most performances are held in Rowe Arts Building, a facility which is shared with the Departments of Visual Arts and Dance and Theatre. The building contains a recital hall, two rehearsal rooms, a 30-station listening laboratory, a computer-assisted learning room, two theatres, dance studios, various visual arts studios, classrooms, practice rooms and faculty offices.

BACHELOR OF CREATIVE ARTS (BCA)

A major in music leading to the BCA consists of 59 semester hours of music including music appreciation, six semesters of structure and style, four semesters of ear training, two semesters of music history, eight semesters of private instruction on the student's principal instrument or voice, and eight semesters of ensemble. Each student majoring in music must enroll in class and applied piano until the keyboard proficiency requirement is fulfilled. A junior recital (20-30 minutes) and a senior recital (at least 50 minutes) must be presented; authorization to present a recital may be granted only following a hearing by the music faculty. All students majoring in music are required to attend Recital Seminars each semester of residence.

Reviews. A committee of at least three faculty members will review the work of each student having less than a 2.5 GPA at the end of the semester during which the student completes his/her 30th credit hour. The purpose of the review is to evaluate the potential of the student in terms of his/her goals in the major field of study. Students who show no evidence of development will be encouraged to alter their goals.

The committee will again review the student's progress near the end of the semester during which he/she expects to complete the 60th credit hour. The committee will determine that the student should continue in the program, that he/she should be withdrawn from BCA degree candidacy, or that he/she must be reviewed again after a year. The Chairperson will inform the student in writing of the committee's recommendation.

MUSIC MINOR

A minor in music requires 23 semester hours: 10 hours of structure and style, three hours of music appreciation, four hours of ensemble, and six hours of applied music (private lessons).

CONCENTRATION IN MUSIC FOR ELEMENTARY EDUCATION MAJORS

The concentration requires 26 hours to include: (1) one course in Music for Teachers, MUSC 2191; (2) one course in Elementary Music Methods, MUSC 2192; (3) one course in Music Appreciation, MUSC 1132; (4) one course in Music Rudiments, MUSC 1100 or one course in Musical Structure and Style, MUSC 1230; (5) four hours of Piano 1233-1234; (6) four hours in ensembles and six hours of applied music.

HONORS PROGRAM

The honors program in Music was developed primarily for majors and is based on individual honors projects.

Admission. Students must have completed a number of course prerequisites and at least 60 semester hours of coursework and have an overall GPA of 3.0 and a 3.5 in Music coursework. Additionally;, honors students must be recommended by the Department Honors Committee to participate in the program.

Courses. The courses offered are "Individual Project, Honors" at both the junior and senior levels.

Certification Requirements. A student must complete 15 hours of honors individual projects, with at least six hour s of work at the senior indi vidual level and achieve an overall GPA of 3.5 in all honors coursework completed in the Department.

SUGGESTED SCHEDULE: BCA, MUSIC

Freshman Year

MUSC 1230	3	MUSC 1231	3
MUSC 1260	2	MUSC 1261	2
*MUSC 1233	2	*MUSC 1234	2
MUSC-Applied	2	MUSC-Applied	2
MUSC-Ensemble	1	MUSC-Ensemble	1
MUSC 1132 (GOAL V: A)	3	GOAL VI: (X)	3
ENGL 1101	3	ENGL 1102	3
Recital Seminar	0	Recital Seminar	0

Sophomore Year

MUSC 2230	3	MUSC 2231	3
MUSC 2260	2	MUSC 2261	2
*MUSC 2233	1	*MUSC 2234	1
MUSC-Applied	2	MUSC-Applied	2
MUSC-Ensemble	1	MUSC-Ensemble	1
Recital Seminar	0	Recital Seminar	0
Foreign Language	4	Foreign Language	4
GOAL II	3	GOAL II	3

Junior Year

MUSC 3230	3	MUSC 3231	3
MUSC 3170	3	MUSC 3171	3
MUSC-Applied	2	MUSC-Applied	2
MUSC-Ensemble	1	MUSC-Ensemble	1
Recital Seminar	0	Recital Seminar	0
GOAL IV	4	**Junior Recital	0
GOAL I: (W)	3	GOAL IV	4
		GOAL I: (W)	3

Senior Year

MUSC-Applied	2	MUSC-Applied	2
MUSC-Ensemble	1	MUSC-Ensemble	1
Recital Seminar	0	Recital Seminar	0
GOAL IV	4	**Senior Recital	0
GOAL III	3	GOAL V: (L)	3
Electives	6	GOAL VI: (C)	3
		Electives	3

*All music majors must enroll in piano until the keyboard proficiency is fulfilled. Not required if proficiency is met.

**See Music Handbook for Recital Policies.

MUSIC (MUSC) COURSE DESCRIPTIONS

MUSC 0971. Orchestra. (1) Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(On demand)*

MUSC 0972. Jazz Ensemble. (1) Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

MUSC 0973. Wind Ensemble. (1) Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

MUSC 0974. Guitar Ensemble. (1) Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

MUSC 0982. University Chorale. (1) Prerequisite: audition. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

MUSC 0983. Madrigal Ensemble. (1) Prerequisite: audition. A performing ensemble. May be repeated for credit. Three contact hours. *(On demand)*

MUSC 1100. Rudiments of Music. (3) Introductory skill-building course in music reading. *(On demand)*

MUSC 1132. Music Appreciation. (A) (3) Aural approach to musical comprehension. *(Fall, Spring, Summer)*

MUSC 1133. The History of Rock Music. (3) A chronological approach to the evolution of rock music, its varied styles and artists. *(Fall, Summer)*

MUSC 1134. The Evolution of Jazz. (3) A chronological approach to the history of jazz, its main styles and artists. *(Spring)*

MUSC 1230. Musical Structure and Style I. (3) Prerequisite: consent of instructor. Relationships of basic musical concepts within a historical context. Three contact hours. *(Fall)*

MUSC 1231. Musical Structure and Style II. (3) Prerequisite: MUSC 1230. A continuation of MUSC 1230. Three contact hours. *(Spring)*

MUSC 1233. Class Piano I. (2) Prerequisite: consent of instructor. Class instruction in piano. Three contact hours. *(Fall, Spring)*

MUSC 1234. Class Piano II. (2) Prerequisite: consent of instructor. A continuation of MUSC 1233. Three contact hours. *(Fall, Spring)*

MUSC 1237. Class Voice. (2) Class instruction in voice. Three contact hours. *(Fall, Spring)*

MUSC 1238. Guitar Class I. (2) Prerequisite: consent of instructor. Class instruction in guitar using contemporary popular music and music from a text. Three contact hours. *(Fall, Spring)*

MUSC 1239. Guitar Class II. (2) Prerequisite: consent of instructor. Continuation of MUSC 1238. Three contact hours. *(Fall, Spring)*

MUSC 1241-1259. Applied Music courses consist of private instruction, one-half hour instruction per week, per credit hour. Minimum of one hour practice per day for one credit, two hours for two credits. May be repeated for credit.

MUSC 1241. Applied Music: Trumpet. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1242. Applied Music: French Horn. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1243. Applied Music: Trombone. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1244. Applied Music: Tuba. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1245. Applied Music: Guitar. (1-2) Prerequisite: consent of instrutor. *(Fall, Spring)*

MUSC 1246. Applied Music: Harp. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1247. Applied Music: Organ. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1248. Applied Music: Piano. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1249. Applied Music: Violin. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1250. Applied Music: Viola. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1251. Applied Music: Cello. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1252. Applied Music: Bass. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1253. Applied Music: Voice. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1254. Applied Music: Flute. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1255. Applied Music: Clarinet. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1256. Applied Music: Saxophone. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1257. Applied Music: Oboe. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1258. Applied Music: Bassoon. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1259. Applied Music: Percussion. (1-2) Prerequisite: consent of instructor. *(Fall, Spring)*

MUSC 1260. Ear Training I. (2) The development of aural skills through sight singing, melodic, rhythmic and harmonic dictation. Three contact hours. *(Fall)*

MUSC 1261. Ear Training II. (2) Prerequisite: MUSC 1260. Continuation of Ear Training I. Three contact hours. *(Spring)*

MUSC 2137. Phonetics and Articulation for Singers I. (3) Prerequisite: consent of instructor. Pronunciation and articulation in vocal music in English, Italian, German and French. Three contact hours. *(Fall)*

MUSC 2138. Phonetics and Articulation for Singers II. (3) Prerequisites: MUSC 2137 and consent of instructor. Three contact hours. *(Spring)*

MUSC 2191. Music for Classroom Teachers. (3) Acquisition of musical skills and relating them to methods and materials for teaching music in the classroom. *(Fall, Spring)*

MUSC 2192. Elementary Music Methods. (3) Prerequisite: MUSC 2191 or consent of instructor. Methods and materials for teaching music to elementary school children. *(On demand)*

MUSC 2193. Secondary Music Methods. (3) Methods and materials for teaching music to junior and senior high school students. *(On demand)*

MUSC 2230. Musical Structure and Style III. (3) Prerequisite: MUSC 1231. A continuation of MUSC 2230. Three contact hours. *(Fall)*

MUSC 2231. Musical Structure and Style IV. (3) Prerequisite: MUSC 2230. A continuation of MUSC 2230. Three contact hours. *(Spring)*

MUSC 2233. Class Piano III. (1) Prerequisite: consent of instructor. Continuation of Class Piano II. Two contact hours. *(Fall)*

MUSC 2234. Class Piano IV. (1) Prerequisite: consent of instructor. Continuation of Class Piano III. Two contact hours. *(Spring)*

MUSC 2235. Jazz Improvisation I. (2) Prerequisite: consent of instructor. An introduction to major, minor diminished, augmented, 7th, 9th, 11th, and 13th chords and to their usage within the confines of a piece of music with particular attention to the melodic line. *(Fall)*

MUSC 2236. Jazz Improvisation II. (2) Prerequisite: consent of instructor. An expansion of MUSC 2235, with particular attention to refinement and maturity of the melodic line. *(Spring)*

MUSC 2260. Ear Training III. (2) Prerequisite: MUSC 1261. Continuation of Ear Training II. Three contact hours. *(Fall)*

MUSC 2261. Ear Training IV. (2) Prerequisite: MUSC 2260. Continuation of Ear Training III. Three contact hours. *(Spring)*

MUSC 3001. Topics in Music. (1-6) Prerequisite: consent of instructor. Special topic in music. May be repeated for credit with change of topic. *(On demand)*

MUSC 3135. Choral Conducting. (3) Prerequisite: MUSC 2231. Developing conducting skills for interpreting choral music. *(On demand)*

MUSC 3136. Instrumental Conducting. (3) Prerequisite: MUSC 3135. Developing conducting skills for interpreting instrumental music. *(On demand)*

MUSC 3137. Vocal Pedagogy. (3) Prerequisite: two semesters of MUSC 1253 or permission of instructor. A methodology course dealing with technique, vocal problem/solution and physiology, and voice production. *(Spring)*

MUSC 3138. Counterpoint. (3) Prerequisite: MUSC 2231. Counterpoint beginning with 16th century techniques. *(On demand)*

MUSC 3139. Orchestration. (3) Prerequisite: MUSC 2231. Scoring and arranging for instruments and/or voice. *(On demand)*

MUSC 3170. Music History I. (3) Prerequisite: consent of instructor and MUSC 1132. Music history and literature from the Medieval Period through the Classical era. *(Fall)*

MUSC 3171. Music History II. (3) Prerequisite: consent of instructor and MUSC 1132. Music history and literature from the Romantic Era to the present. *(Spring)*

MUSC 3230. Musical Structure and Style V. (3) Prerequisite: MUSC 2231. Continuation of Musical Structure and Style IV with emphasis on twentieth century musical idioms. *(Fall)*

MUSC 3231. Musical Structure and Style VI. (3) Prerequisite: MUSC 3230. Continuation of Musical Structure and Style V. *(Spring)*

MUSC 3281. Chamber Music Ensembles. (1 or 2) Prerequisite: consent of instructor. Performance by small groups of specific works. *(Fall, Spring)*

MUSC 3283. Opera Workshop. (2) Prerequisite: audition. Performance of scenes, acts, and entire operas. May be repeated for credit. Three contact hours. *(Fall, Spring)*

MUSC 3831. Composition. (2) Prerequisite: MUSC 2231 and consent of instructor. Private instruction. May be repeated for credit. One contact hour. *(Fall, Spring)*

Department of Philosophy

Chairperson: Assistant Professor Toenjes; *Professors:* Fishman, Lincourt, Shumaker; *Associate Professors:* Croy, Gay, Presler; *Lecturer:* Duhan

Philosophy is reasoned inquiry into basic principles for understanding the nature of persons, reality, thought, knowledge, values and beauty. It seeks to establish standards of evidence, to provide rational methods of resolving conflicts, and to create techniques for evaluating fundamental ideas and arguments in all areas of human existence and knowledge. Equally concerned with human endeavor in both the arts and the sciences, philosophy continues to reside at the core of a liberal education.

Students major or minor in philosophy out of a love for the subject and a need to pursue fundamental ideas and principles. The study of philosophy does not contribute primarily to obtaining one's first job after graduation; rather, its value lies in the range of things one can understand and enjoy throughout life. Immediate career opportunities are the same as for other solid programs in liberal arts and sciences.

Many students take just one or two philosophy courses, while majoring in other programs. They find their study of basic ideas and principles enriches their general education and adds a dimension of understanding to courses in their major program. Students often find that philosophy courses give them a deeper understanding of many contemporary social issues, such as biomedical, business, professional and technological ethics. Courses in critical thinking and logic are a benefit to students in all their coursework and can be especially useful to students who plan to enter graduate school, law school, and various professional fields.

BACHELOR OF ARTS

A major in philosophy leading to a B.A. degree consists of a minimum of 28 semester hours in philosophy, at least 14 of which are earned at UNC Charlotte with the grade of *C* or better, and a GPA of 2.5 for all philosophy courses applied to the major. PHIL 2101, 2105, 3211, 3213, and Senior Thesis 3991 and 3992 are required. Of the remaining 12 hours, at least six must be in traditional historical periods (Ancient, Medieval, Modern, or Contemporary) or in traditional problem areas (Aesthetics, Ethics, Metaphysics, Theory of Knowledge, or another course of this type with departmental approval). Further specification of traditional periods and problems is given in the Philosophy Department Policy Manual available in the department. PHIL 1105 may not be applied to the major unless department approval has been given. Criteria governing department approval are stated in the Policy Manual.

Required related work consists of 15 hours of coursework that complements the focus of the student's work in philosophy. Such work is to be chosen in consultation with the department representative or adviser. The completion of a minor or second major fulfills the related work requirement. Students contemplating graduate study in philosophy are encouraged to develop reading proficiency in German and French.

PHILOSOPHY MINOR

A minor in philosophy consists of 15 hours including the following courses and types of courses: PHIL 2101; one course in Logic (PHIL 1105, 2105 or 3235); one course in the traditional historical periods (Ancient, Medieval, Modern, or Contemporary); one course in a traditional problem area (Aesthetics, Ethics, Metaphysics, Theory of Knowledge, or another course of this type with departmental approval); and one additional three-hour course at the 3000 level or above.

PHILOSOPHY (PHIL) COURSE DESCRIPTIONS

PHIL 1105. Critical Thinking. (3) Fundamental skills of clear thinking and critical assessment of typical messages by and between persons in everyday situations. Application of logical methods to advertisements, editorials, political speeches and textbooks to distinguish effective from ineffective forms of reasoning. *(Fall, Spring, Summer)*

PHIL 2101. Introduction to Philosophy. (L) (3) Basic concepts and problems of philosophy such as freedom and determinism, mind-body interaction, the status of moral judgments, and the nature of knowledge. Readings from the works of representative philosophers both classical and contemporary. *(Fall, Spring, Summer) (Evenings)*

PHIL 2105. Deductive Logic. (P) (3) Principles of deductive logic, both classical and symbolic, with emphasis on the use of formal logic in analysis or ordinary language discourse. *(Fall, Spring, Summer) (Evenings)*

Note on prerequisites for upper-level courses. Introduction to Philosophy (PHIL 2101), while not a prerequisite for courses at the 3000 level and above, is the basic introduction to the subject. Typically students who have taken PHIL 2101 benefit more from upper-level philosophy courses than students who have not.

PHIL 3050. Topics. (3) Prerequisite: consent of the Department. Topics chosen from specific areas in philosophy such as freedom and determinism, imagination, detailed study of significant philosophical movements or works. May be repeated for additional credit with the approval of the Department. *(On demand)*

PHIL 3060. Major Figure in Philosophy. (3) Prerequisite: consent of the Department. An investigation into the thoughts and writings of a major figure in philosophy with special emphasis on primary sources. Included may be Plato, Aristotle, Descartes, Kant, Heidegger, and others as indicated by departmental needs and interests. May be repeated for additional credit. *(On demand)*

PHIL 3201. Meaning of Death. (3) Death in the western tradition. Philosophical, religious, existential, psychological and literary readings clarifying conceptual problems in our ways of speaking about death. Understanding death as a horizon for understanding life. (Same as RELS 3201.) *(On demand)*

PHIL 3205. Philosophy In and Of Literature. (A) (3) Relationship between philosophy and literature with special emphasis on the nature of literature as it presents concepts and evaluations. Readings will be in the theory of literature as well as in contemporary novels, plays and short stories for both their philosophical and their aesthetic properties. *(On demand)*

PHIL 3211. Ancient Philosophy. (3) Western intellectual and philosophic thought from the early Greeks to the post-Aristotelian period. Readings from the pre-Socratics, Plato, Aristotle, Epicureans, Stoics, Skeptics and Neoplatonists. *(Fall)*

PHIL 3212. Medieval Philosophy. (3) Western philosophical tradition from Augustine to William of Ockham. Readings include such other authors as Anselm of Canterbury, Bonaventure, Thomas Aquinas and Duns Scotus. *(On demand)*

PHIL 3213. Modern Philosophy from Descartes to Kant. (3) Modern philosophic and scientific thought. Readings selected from representative works in the 17th to the 19th centuries. *(Spring)*

PHIL 3214. Contemporary Philosophy. (3) Main problems of contemporary philosophy; pragmatism, logical positivism, linguistic analysis, existentialism. *(On demand)*

PHIL 3217. American Philosophy. (3) European philosophic movements with counterparts in American thought, leading to distinctly American pragmatism, realism and humanism. Readings from 19th- and 20th-century philosophers. *(On demand)*

PHIL 3221. Ethics. (V) (3) A study of the nature and foundations of moral judgment, the principles and criteria for sound moral decisions, and the application of these to contemporary moral issues. Discussion includes such specific problems as: abortion, capital punishment, privacy, war, and sexual morality. *(On demand)*

PHIL 3223. Existentialism. (A) (3) Existentialist tradition in philosophy and literature including such issues as: authenticity, absurdity and the meaning of life, freedom and morality, anguish, death, and atheism. *(On demand)*

PHIL 3225. Aesthetics. (A) (3) Major theories of art, including readings from Aristotle, Kant, Nietzsche, Collingwood, Dewey, Langer and Beardsley. Emphasis on expression, criticism, the work of art, and the creative process. *(Fall, Spring)*

PHIL 3226. Social and Political Philosophy. (C) (3) Philosophical concepts involved in understanding and evaluating the basic structure of societies (e.g., economic, educational, legal, motivational and political) including equality, fraternity, freedom and rights. Relevance to contemporary social and political issues stressed. Readings from classical and contemporary sources. Same as POLS 3177. Taught by Philosophy Department. *(On demand)*

PHIL 3228. Biomedical Ethics. (V) (3) Major ethical dilemmas within the life sciences examined to assist students to identify, analyze, and decide ethical issues in such a way that they can defend their positions to themselves and others. Issues include abortion, death and dying, patient rights, and justice in the allocation of medical resources. *(Yearly)*

PHIL 3231. Business Ethics. (V) (3) Ethical problems confronting business as a social institution and individuals in business. Application of ethical theory to business institutions and practices, internal exchanges of business (e.g., hiring, promotions, working conditions, employer/employee rights and duties) and external exchanges (e.g., product safety, environment, depletion, marketing, advertising.) *(Spring)*

PHIL 3235. Advanced Logic. (3) Advanced systems of logic, with emphasis upon symbolic logic and formal systematic characteristics such as axiomatics and proof techniques. *(On demand)*

PHIL 3242. Philosophy of Religion. (3) Philosophical implications of religious experience including the definitions, development and diverse forms of the problems of belief and reason in modern thought. (Same as RELS 3242.) *(On demand)*

PHIL 3245. Philosophy of Mind. (3) Conceptual issues in the mind/body problem and the problem of other minds. Analysis of concepts of intention, motivation, consciousness, imagination and emotion. *(On demand)*

PHIL 3247. Philosophy of Science. (3) Epistemological, methodological, metaphysical, interdisciplinary and meta-disciplinary issues arising out of science with "science" construed very broadly to imply a strong connection with all systematic inquiry, either past or present, into natural or social questions. *(On demand)*

PHIL 3265. Theory of Knowledge. (3) A study of various theories on the nature, foundations and limits of knowledge. Analysis of the notions of knowledge and belief, evidence and the sources of knowledge. Discussion of the principles and criteria for distinguishing knowledge from opinion or belief. Readings from both classical and contemporary sources. *(On demand)*

PHIL 3275. Metaphysics. (3) Inquiry into the most fundamental and comprehensive structures and categories of reality, especially in relation to persons as knowers and agents. Discussion of such topics as: being, existence and truth; substance, essence and accident; universals and individuals; mind, soul, matter and god. *(On demand)*

PHIL 3851. Practicum in Philosophy. (1-3) Prerequisite: consent of the Department. Directed individual study involving the student and instructor in rethinking and reworking some major problems in the teaching of undergraduate philosophy including interaction with a particular class, usually PHIL 1105, 2101 or 2105, in the preparation, presentation and evaluation of the course. (Not for teacher certification.) *(On demand)*

PHIL 3859. Independent Study. (1-3) Prerequisite: consent of the Department. Directed individual study of a philosophical issue of special interest to the student. May be repeated for additional credit as the topics vary and with departmental approval. No more than six hours may apply toward the major in philosophy. *(On demand)*

PHIL 3991. Senior Thesis. (2) Prerequisite: consent of the Department. Individual or group inquiry into selected philosophic problems. Exposition and discussion of the results. *(On demand)*

PHIL 3992. Senior Thesis. (2) Prerequisite: consent of the Department. A continuation of PHIL 3991 focused on preparation and presentation of a senior thesis. *(On demand)*

Courses for Advanced Undergraduate and Graduate Students
Additional work required of students receiving graduate credit.

PHIL 4050. Topics in Philosophy. (3) (3G) Prerequisite: consent of the Department. Extra work is required of students receiving graduate credit. Selected problems and issues in philosophy. May be repeated for additional credit as topics vary. *(On demand)*

Department of Physics

Chairperson: Professor Almeida; *Professors:* Pollak, Vermillion, Werntz; *Associate Professors:* Corwin, Farahi, Mayes, Melton, Oberhofer, Simpson; *Assistant Professors:* Raja, Tam; *Lecturer:* Aktas

Undergraduate study in physics is designed for students who seek simply to better understand the physical universe, as well as for students who will seek employment in a technical field following graduation, continue professional study or teach science in the public schools. The Department offers programs leading to the Bachelor of Arts and the Bachelor of Science degrees. Students who graduate with a bachelor's degree in physics may pursue graduate study in physics, engineering, or computer science or study in optometry or the medical field.

Physics students have special opportunities at UNC Charlotte. The Department of Physics is large enough to afford a variety of experiences for the students, but not so large that the student loses personal access to the faculty. Each student has the opportunity to work closely with individual faculty members of his/her choice, both in formal laboratory courses and on individual research projects.

Upper-level undergraduates have the opportunity to assist faculty members in teaching introductory physics laboratories. This gives students practical training as well as an employment opportunity usually available only to graduate students.

BACHELOR OF ARTS

A major in physics leading to the B.A. degree consists of a minimum of 120 semester hours which fulfill the general degree requirements of The University. A minimum of 26 semester hours in physics with an average grade of *C* in the major area is required. The minimum of 26 hours must include PHYS 2221, 2221L, 2231, 2231L, 2241, 4251 and at least 12 additional hours at the 3000/4000 level to be approved by the Department. Also required for the B.A. degree are CHEM 1101, 1101L, ENGL 2116 and MEGR 2154.

BACHELOR OF SCIENCE

A major in physics leading to the B.S. degree consists of a minimum of 120 semester hours which fulfill the general degree requirements of The University. A minimum of 36 semester hours in physics with an average grade of *C* in the major area is required. The minimum 36 hours must include PHYS 2221, 2221L, 2231, 2231L, 2241, 3285, 4221, 4231, 4241, 4251; at least two hours selected from PHYS 3281, 3284 or 3900; and at least eight additional hours at the 3000/4000 level to be approved by the Department. Also required for the B.S. degree are CHEM 1101, 1101L, ENGL 2116, MEGR 2154, and an introduction to computer programming—either CSCI 1100P, or EEGR 1102 and 2101.

A first-year sequence of PHYS 1101 and 1102, or CHEM 1101 and 1102 may be recommended. Students should note that MATH 1141, 1142, 2141, and 2171 are prerequisites for various required physics courses. Freshmen should arrange their mathematics schedule so as to complete MATH 1141 before beginning their sophomore year.

BACHELOR OF SCIENCE: APPLIED PHYSICS OPTION

A major in physics leading to the B.S. degree with the applied physics option requires a minimum of 32 semester hours in physics, eight semester hours of chemistry, nine semester hours of computer science, and 19 semester hours of engineering with a minimum grade point average of 2.0. The 32 required hours in physics are PHYS 2221, 2221L, 2231, 2231L, 2241, 3181, 3285, 4221, 4231, 4241, 4251, and PHYS 3281 or 3900. The required courses in computer science are CSCI 1100P, 2140 and 2141. The minimum engineering requirement consists of MEGR 1102 or CEGR 2101, MEGR 2154, ESGR 2141 and 3141, EEGR 2161 and 2162, and MEET 3133. Students in this track are encouraged to select one of their free electives from PHYS 4201 and 4261. MATH 1141, 1142, 2141, and 2171 and ENGL 2116 are prerequisite courses for certain required physics courses.

PHYSICS MINOR

A minor in physics is available to all undergraduates except physics majors and requires PHYS 2221, 2221L, 2231, 2231L and 2241, and six additional hours in physics selected from the 3000/4000 level and approved by the Department.

HONORS PROGRAM IN PHYSICS

To obtain a degree with honors in physics, the student must successfully complete PHYS 3900, and at least two courses selected from PHYS 4222, 4232 and 4242. The student must formally enter the Honors Program no later than the beginning of the second semester of the junior year. The Honors Committee of the Physics Department must formally approve admission. Details concerning this program are available from the Physics Department.

COOPERATIVE EDUCATION PROGRAM

Students majoring in physics have an opportunity to combine work experience with their academic experience. The Cooperative Education Program is a plan whereby a student completes his/her lower division coursework, and, after being formally accepted as a co-op student, alternates periods of academic coursework with periods of paid employment in an area mutually agreed upon by the student, an employer and The University. This program enables the student to integrate classroom instruction with practical on-the-job experience with business, industry, government agencies, or other employers. A student electing this option should expect to graduate in five years, instead of the four years normally required. Further information regarding Cooperative Education can be found on page 303 of this *Catalog*. Information regarding the application procedure for admission into this program can be obtained from the Physics Department.

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

PHYS 1101 + 1101L	4	MATH 1141	4
ENGL 1101	3	ENGL 1102	3
CHEM 1101	3	PHYS 1102	3
CHEM 1101L	1	PHYS 1102L	1
GOAL III	3	GOAL V: (A)	3
HPED	1	ARTS (DANC, THEA, MUSC)	1

Sophomore Year

PHYS 2221	3	PHYS 2231	3
PHYS 2221L	1	PHYS 2231L	1
MATH 1142	4	CSCI 1100P	3
ENGL 2116 (GOAL I: W)	3	MATH 2141	3
CHEM 1102	3	HPED	1
CHEM 1106L	1	Electives (GOAL I: W)	6

Junior Year

PHYS 2241	3	GOAL V: (L)	6
GOAL VI: (C)	3	PHYS Elective	3
MEGR 2154	2	CSCI Elective	3
MATH 2171	3	COMM 1101	3
GOAL VI: (X)	3		

Senior Year

Electives	9	Electives	9
PHYS 4251	3	PHYS Elective	6
PHYS Elective	3		

SUGGESTED SCHEDULE: B.S. DEGREE

Freshman Year

MATH 1141 4	MATH 1142 4
ENGL 1101 3	ENGL 1102 3
CHEM 1101 3	PHYS 2221 3
CHEM 1101L 1	PHYS 2221L 1
GOAL III 3	Electives (GOAL I: W) 4
HPED 1	

Sophomore Year

PHYS 2231 3	PHYS 2241 3
PHYS 2231L 1	CSCI 1100P 3
MATH 2141 3	MATH 2171 3
ENGL 2116 (GOAL I: W) 3	MEGR 2154 2
HPED 1	GOAL V: (A) 3
Elective 3	

Junior Year

PHYS 4221 3	Elective (GOAL VI: C) 3
PHYS 4251 3	PHYS Elective 6
PHYS 3285 3	CSCI Elective 3
MATH Elective 3	COMM 1101 3
GOAL VI: (X) 3	

Senior Year

PHYS 4241 3	GOAL V: (L) 3
PHYS 4231 3	PHYS Electives 8
MATH Elective 3	Elective 3
PHYS Elective 3	
MATH Elective 3	

SUGGESTED SCHEDULE: APPLIED PHYSICS OPTION

Freshman Year

MATH 1141	4	MATH 1142	4
GOAL III	3	PHYS 2221	3
ENGL 1101	3	PHYS 2221L	1
CHEM 1101	3	ENGL 1102	3
CHEM 1101L	1	CHEM 1102	3
Elective (GOAL I: W)	1	CHEM 1102L or 1106L	1

Sophomore Year

PHYS 2231	3	PHYS 2241	3
PHYS 2231L	1	MATH 2171	3
MATH 2141	3	CSCI 1100P	3
ESGR 2141	3	MEGR 1102	2
ENGL 2116 (GOAL I: W)	3	MEGR 2154	2
Elective	1	GOAL V: (A)	3

Junior Year

PHYS 4221	3	CSCI 2140	3
EEGR 2161	3	EEGR 3141	3
PHYS 3285	3	EEGR 2162	3
PHYS 4251	3	GOAL V: (L)	3
PHYS 4241	3	GOAL VI: (C)	3

Senior Year

PHYS 4231	3	CSCI 2141	3
GOAL VI: (X)	3	Electives	12
PHYS 3181	4		
MEET 3133	3		
Elective	3		

ASTRONOMY COURSE DESCRIPTIONS

PHYS 1130. Introduction to Astronomy. (S) (3) Historical beginnings of astronomy. Motions of celestial bodies. Introduction to space science. The solar system. Optical and radio astronomy. Structure and evolution of stars. Galaxies, cosmology. Three lecture hours each week. If taken together with 1130L the combination can be counted toward the general degree requirements in natural science. *(Fall, Spring, Summer)*

PHYS 1130L. Introduction to Astronomy Laboratory. (S) (1) Prerequisite or corequisite: PHYS 1130. Experimental investigations relating to the acquisition of and interpretation of astronomical data. One three-hour laboratory each week. *(Fall, Spring) (Evenings)*

PHYS 2130. Introduction to Astronomy and Astrophysics. (3) Prerequisites: PHYS 2221 and MATH 1141. Motion of celestial bodies, solar system, the evolution of stars, galaxies, and cosmology. Quantitative treatment of astronomy and astrophysics. PHYS 2130 is an alternative to PHYS 1130 rather than a second course in an astronomy sequence. Three lecture hours each week. Students who have the prerequisites for PHYS 2130 cannot take PHYS 1130. *(Fall, Spring)*

PHYSICS (PHYS) COURSE DESCRIPTIONS

Courses for Undergraduates

PHYS 1101. Introductory Physics I. (S) (3) Corequisite: PHYS 1101L. Introduction to the fundamental principles of natural phenomena. Topics will be selected from traditional classical subjects (e.g., Newtonian mechanics, electromagnetism) and more recent developments in order to illustrate the logical structure of modern science. Three lecture hours each week. *(Fall, Spring, Summer)*

PHYS 1101L. Introductory Physics I Laboratory. (S) (1) Corequisite: PHYS 1101. Laboratory investigations illustrating experimental techniques and fundamental principles of natural phenomena. Three laboratory hours each week. *(Fall, Spring, Summer)*

PHYS 1102. Introductory Physics II. (S) (3) Corequisite: PHYS 1102L; Prerequisite: PHYS 1101. A continuation of PHYS 1101. Three lecture hours each week. *(Fall, Spring, Summer)*

PHYS 1102L. Introductory Physics II Laboratory. (S) (1) Corequisite: PHYS 1102; Prerequisite: PHYS 1101L. A continuation of PHYS 1101L. Three laboratory hours each week. *(Fall, Spring, Summer)*

PHYS 1121. Physical Science. (S) (4) A lecture/laboratory course in physical science. Topics include: states of matter; velocity, acceleration and force; electricity and magnetism; and waves, sound, and light. A discovery-oriented course which emphasizes selected physical science principles. Six laboratory/lecture hours per week. *(Fall, Spring)*

PHYS 1141. Modern Physics for Non-Science Students. (3) Treatment of physical theories developed since 1900. Topics include relativity, quantum physics, nuclear physics and elementary particles. Historical and philosophical aspects are stressed throughout the course. Three lecture hours a week. *(On demand)*

PHYS 1150. Basic Concepts in Physical Science with Applications to Teaching. (4) Intended primarily for students in teacher education. Development of a context for scientific literacy including processes and attitudes involved in scientific work and the introduction and application of essential concepts such as property, interaction, measurement and control of variables, relativity of position and motion, energy, and scientific model. An activity-oriented course with emphasis on applications to teaching. Six laboratory/class hour per week. *(On demand)*

PHYS 2221. Dynamics. (S) (3) Prerequisite: MATH 1141. Kinematics and dynamics of particles; momentum, work, energy; conservation laws, mechanics of rigid bodies. Three lecture hours a week. *(Fall, Spring, Summer) (Evenings)*

PHYS 2221L. Experimental Physics I. (S) (1) Corequisite: PHYS 2221. The first course of a laboratory sequence developing toward open-ended experiments designed to illustrate physical principles, to develop experimental technique and to encourage individual investigation by the student. Experiments in classical mechanics. One three-hour laboratory each week. *(Fall, Spring, Summer) (Evenings)*

PHYS 2231. Electricity and Magnetism. (S) (3) Prerequisites: PHYS 2221 and MATH 1142. Electric and magnetic fields in free space and in matter; electrostatic potential and capacitance; elementary circuit theory; electromagnetic induction and inductance; introduction to Maxwell's equations. Three lecture hours a week. *(Fall, Spring, Summer) (Evenings)*

PHYS 2231L. Experimental Physics II. (S) (1) Prerequisite: PHYS 2221L. Corequisite: PHYS 2231. Experiments in electricity and magnetism. One three-hour laboratory each week. *(Fall, Spring, Summer) (Evenings)*

PHYS 2241. Introduction to Waves and Modern Physics. (3) Prerequisite: PHYS 2231. Introduction to waves in elastic media; sound; light; reflection; refraction; interference and diffraction; lenses and mirrors; and an introduction to quantum physics, atomic and nuclear structure, and the wave nature of matter. Three lecture hours a week. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates

PHYS 3000. Topics in Physics. (S)(0-4) Prerequisite: consent of the Department. Used to comply with requests for special topics which are introductory in nature. May be repeated with approval of the Department. *(On demand)*

PHYS 3181. Electronics and Microcomputer Interfacing. (4) Prerequisites: PHYS 2231 and 2231L, CSCI 1100P or equivalent programming experience. Study of analog and digital electronics and microcomputer interfacing. Topics will include logic gates, counters, decoders, flip-flops, latches, memories, operational amplifiers, analog-to-digital and digital-to-analog converters, IEEE-488, RS-232C and current loop interfaces, interrupts, BASIC programming, and microcomputer input-output techniques. Six lecture/laboratory hours per week. *(Spring) (Alternate years)*

PHYS 3281. Advanced Laboratory in Waves and Optics. (2) Prerequisite or corequisite: PHYS 2241. Selected laboratory work primarily in geometrical optics and microwaves. Emphasis on development of sound laboratory techniques, methods of data analysis, and the writing of formal laboratory reports. Three hours of laboratory each week. *(Spring) (Alternate years)*

PHYS 3285. Advanced Experimental Physics. (W) (3) Prerequisites: MEGR 2154, PHYS 2241 and MATH 2171. Selected laboratory work in such areas as classical mechanics, oscillatory phenomena, modern physics, atomic and nuclear physics, and the interaction of radiation with matter. Emphasis on development of sound laboratory techniques, methods of data analysis, and the writing of formal laboratory reports. Six hours of laboratory each week. *(Fall)*

PHYS 3400. Internship in Community Education and Service. (3) Prerequisites: junior standing, acceptance into the internship program and approval by the Physics Department. A project-oriented, service-learning internship with cooperating community organizations. Does not count as credit toward departmental requirements in physics. May be repeated once with permission of the Department. This course is offered on a *Pass/No Credit* basis. *(On demand)*

PHYS 3590. Physics Cooperative Work Experience. (0) Prerequisites: junior standing and consent of department. Registration in PHYS 3590 is required of Co-Op students during the semesters they are working. *(Fall, Spring, Summer)*

PHYS 3900. Senior Project. (2-3) Prerequisites: senior standing and consent of the faculty member overseeing the project; PHYS 3285. Independent investigation under the supervision of faculty member on a project that is approved by the departmental Undergraduate Studies Committee. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students

PHYS 4000. Selected Topics in Physics. (0-4) (0-4G) Prerequisite: consent of the Department. Advanced special topics. May be repeated with approval of the Department. *(On demand)*

PHYS 4201. Waves and Optics. (3) (3G) Prerequisites: PHYS 2241 and MATH 2171 or consent of department. Topics include the mathematics of wave motion, light as an example of an electromagnetic wave, the superposition of periodic and non-periodic waves, and selected topics from geometrical and physical optics. Three lecture hours each week. *(Spring)*

PHYS 4221. Classical Mechanics I. (3) (3G) Prerequisites: PHYS 2221; MATH 2141 and 2171. The first course of a two-semester sequence treating particle dynamics, the motion of systems of particles, rigid body motion, moving coordinate systems. Lagrange's equations, Hamilton's equations and small oscillations. Three lecture hours a week. *(Fall)*

PHYS 4222. Classical Mechanics II. (3) (3G) Prerequisite: PHYS 4221. Continuation of PHYS 4221. Three lecture hours a week. *(Spring)*

PHYS 4231. Electromagnetic Theory I. (3) (3G) Prerequisites: PHYS 2231; MATH 2141 and 2171. The first course of a two-semester sequence. Topics considered include electrostatics and magnetostatics in free space and in matter, the motion of charged particles in electric and magnetic fields, capacitance, dielectric theory, field energy, electromagnetic induction and inductance, vector and scalar potentials, magnetic properties of matter. Maxwell's equations, solutions of Maxwell's equations in free space and in matter, propagating electromagnetic waves, and boundary value problems. Three lecture hours a week. *(Fall)*

PHYS 4232. Electromagnetic Theory II. (3) (3G) Prerequisite: PHYS 4231. Continuation of PHYS 4231. Three lecture hours a week. *(Spring)*

PHYS 4241. Modern Physics. (3) (3G) Prerequisites: PHYS 2241; MATH 2141 and MATH 2171. Special relativity, postulates of quantum physics, solutions of the one-dimensional Schrodinger wave equation, the hydrogen atom and spin. Three lecture hours a week. *(Spring)*

PHYS 4242. Quantum Mechanics. (3) (3G) Prerequisite: PHYS 4241. An extension of PHYS 4241 to include more advanced topics such as generalized eigenvalue problems, angular momentum, spin, the hydrogen atom, and pertubation theory, with selected applications from atomic, solid state and nuclear physics. Three lecture hours a week. *(Fall)*

PHYS 4251. Thermal Physics. (3) (3G) Prerequisites: PHYS 2241 or consent of the Department; CHEM 1101 and 1101L, MATH 2141. An introduction to heat, thermodynamics, kinetic theory, and statistical physics. Topics include classical thermodynamics, classical and quantum theory of specific heats, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein distributions. Three lecture hours a week. *(Fall)*

PHYS 4261. Nuclear Physics. (3) (3G) Prerequisites: PHYS 2231 and 2241, and MATH 2171. A study of the nucleus, radioactivity, nuclear reactions, fission, fusion interactions of radiation with matter and measurement of radiation. Three lecture hours per week. *(Spring) (Alternate years)*

PHYS 4800. Investigations. (0-2) (1-2G) Prerequisites: junior standing and consent of the Department. An independent investigation by the student on a topic that is approved by the Department meeting as a body. This course may be repeated for up to four hours credit. Students enrolling in this course for 0 credit must take it *Pass/No Credit.* No more than two credit hours for this course may count toward the five additional hours required at the 3000/4000 level for the B.S. degree.

Department of Political Science

Chairperson: Professor Arrington; *Professor Emeritus:* Winningham; *Professors:* Brenner, Dorin, Jamgotch, Lyons, McCoy, Mead, Mundt; *Associate Professors:* C. Brown, Chernotsky, Fleitas, Rhodes; *Assistant Professors:* Combs, R. Brown, Kugelmass, Rassel, Stier; *Adjunct Professors:* Brennan, Burkhalter, Griffin, Wiggins

Political science is the study of politics: government, law, political behavior, public policy and political philosophy. The political science curriculum is designed primarily to afford broad and modern training in the study of political institutions and political behavior for students in the liberal arts and majors planning graduate work. It also affords career-oriented or pre-professional training for teaching, law, business, public relations or work in the mass media, domestic and foreign government service, the military, teaching, and a variety of active roles in politics.

On the graduate level, the Department offers the Master of Public Administration, a professional degree for persons seeking training in public administration with specialization in local government management. (For more information, see the Graduate School section of this *Catalog.*)

BACHELOR OF ARTS

A major in political science for the B.A. degree requires 30 semester hours of political science to include: (1) at least one course from the subfields of American Politics and/or Public Administration; (2) at least one course in the subfield of Comparative Politics and Area Studies; (3) at least one course in the subfield of International Politics; (4) at least one course in the subfield of Political Philosophy; (5) POLS 3220 (Research Methods), and POLS 3990 (Senior Project). No more than nine hours of credit from POLS 3110, 3155, 3156, 3163, 3400 or 4800 can be offered to fulfill major requirements for a political science major.

Note: Courses used by students majoring in Political Science to satisfy the requirement of 30 hours in the major field cannot also be used to meet Goal VI (Understanding the Individual, Society, and Culture) of the Goals of UNCC Education.

Concentration in International Studies. Students may opt to receive the Bachelor of Arts with a concentration in International Studies. Requirements include at least 18 hours (of a total of 30) in courses listed under International Politics, and/or Comparative Politics and Area Studies. Majors seeking this concentration are encouraged to diversify their coursework by completing the minor in International Studies. For information on the minor in International Studies, see *Special Programs.*

Concentration in Political Science for Elementary Education Majors. Students majoring in Elementary Education who choose to complete a concentration in Political Science are required to complete at least 27 credit hours to include: (1) at least one course in the subfield of American Politics and Public Administration, (2) at least one course in the subfield of Comparative Politics and Area Studies, (3) at least one course in the subfield of International Politics, and (4) at least one course in the subfield of Political Philosophy.

Advanced Placement Program. Students who receive an evaluation of Extremely Well Qualified (5) on either the Advanced Placement examination in American Politics or Comparative Politics will receive credit for POLS 1110 or 1130, respectively. Students who receive an evaluation of Well Qualified (4) on either exam will be advised to continue to an upper-level course in that area of the discipline.

POLITICAL SCIENCE MINOR

The political science minor requires: 18 semester hours of political science to include: (1) at least one course from the subfields of American Politics and/or Public Administration; (2) at least one course from the subfield of Comparative Politics and Area Studies; (3) at least one course in the subfield of International Politics, and (4) at least one course in the subfield of Political Philosophy.

Honors Program. The Department of Political Science offers an honors program. For more information, contact the Chairperson, Department of Political Science.

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

POLS 1110 (C), 1130 (X) or 1150 (X).....3	POLS 1110 (C), 1130 (X) or 1150 (X).....3
ENGL 1101.....3	ENGL 1102.....3
FORL 1201 + 1201L.....4	FORL 1202 + 1202L.....4
MATH 1100 or 1101.....3	STAT 1222.....3
GOAL III: V.....3	GOAL V: L.....3

Sophomore Year

POLS 1110 (C), 1130 (X) or 1150 (X).....3	POLS 3000-level course.....3
POLS 3000-level course.....3	American Politics Elective.....3
GOAL IV: S.....4	GOAL I: W (NOT POLS).....3
GOAL V: A.....3	GOAL IV: S.....4
GOAL VI: C.....3	GOAL VI: X.....3

Junior Year

POLS 3000-level course.....3	POLS 3220 + 3220L.....4
GOAL IV: S.....4	POLS 3000-level course.....3
Electives.....9	Electives.....9

Senior Year

POLS 3990 (W).....3	Electives.....12
Electives.....9	

Note: The Political Science curriculum is not highly structured; many of the requirements can be fulfilled in a variety of course sequences, with many choices of specific courses. Thus, the above curriculum should be seen as a *possible* approach to meeting the requirements, which the student may want to vary according to particular needs and circumstances.

POLITICAL SCIENCE (POLS) COURSE DESCRIPTIONS

Course offerings, including introductory courses, are divided into the following major subfields: American Politics, Comparative Politics and Area Studies, International Politics, Political Theory, Public Administration, and Research.

AMERICAN POLITICS

POLS 1110. Introduction to American Politics. (WC) (3) Role of the President, Congress, Supreme Court and national administrative agencies in the American political system. Relationship between the American people and their political institutions with emphasis upon political culture, the electoral process, political parties, interest groups and political communication. *(Fall, Spring, Summer)*

POLS 3010. Topics in American Politics or Public Administration. (1-4). An intensive study of a topic in American politics or public administration. The particular topic investigated may vary from semester to semester, and a student may take more than one course under this number. *(On demand)*

POLS 3101. Political Socialization. (V) (3) Processes by which the political culture of the society is transmitted, formally and informally, to individual members. Learning process, the agents of socialization, the content of the learning and the consequences of political socialization for the functioning of the political system. *(On demand)*

POLS 3103. Public Opinion and the Mass Media. (3) The nature and influence of public opinion and the effects of the news media on public opinion and political behavior. Research on the development and content of public opinion and social psychological studies on the process of opinion change. *(On demand)*

POLS 3104. Mass Media and Politics. (3) Relationship between the media in the United States and (1) the political activities of individual citizens and (2) governmental policy making. Ownership and control of the media, government regulation of the media, news programming and media impact on voter behavior and governmental policy making bodies. *(On demand)*

POLS 3105. Voting and Elections. (3) Psychological, sociological and political variables that influence voting behavior and that affect electoral stability and change with emphasis on studies derived from survey research. *(On demand)*

POLS 3109. Political Parties and Interest Groups. (3) Analysis of the role played by political parties and interest groups in the American political system. *(On demand)*

POLS 3110. North Carolina Student Legislature. (3) Prerequisite: Permission of instructor. Practicum including workshops, seminars and guest speakers on legislative process and research, parliamentary procedure, and resolution and bill drafting; participation in an interim council debate at one of the member campuses for one weekend each month during the semester and participation in the NCSL annual session in Raleigh. May be repeated for credit. *(Spring)*

POLS 3111. The Congress. (3) Analysis of the role of the Congress in the American political system and its relationships with the other branches of government. Recruitment and socialization of congressmen, the committee system and roll call analysis. *(On demand)*

POLS 3112. The Presidency. (3) Analysis of the role of the Presidency in the American political system and its relationships with the other branches of government. Strategies of presidential nomination and election, the sources and indicators of presidential power, how those who have held the office have shaped it and been shaped by it. *(On demand)*

POLS 3114. American Constitutional Law. (3) Development of American constitutionalism, with a major emphasis on the roles played by the Supreme Court in the emergence of the American political system. Studies the justices as intellectual personalities engaged in the formulation of national policies. Utilizes Supreme Court decisions and opinions, histories, biographies and political science analyses to study the evolution of governmental powers and individual rights. *(On demand)*

POLS 3115. Civil Rights and Liberties. (V) (3) Analysis of Supreme Court decisions relating to civil rights and liberties. *(On demand)*

POLS 3116. Judicial Process. (3) Analysis of the structure and functions of federal and state courts in the context of the American political system. Emphasis upon the roles of judges, juries, counsel, litigants, police, interest groups and other actors in the adjudication processes. *(On demand)*

POLS 3117. Politics of Criminal Law. (3) Politics of the Supreme Court interactions with the Congress, Presidency, Justice Department and the states in the formulation of policies related to the criminal law. *(On demand)*

POLS 3118. Law and Social Change. (3) Relationship between law and social changes; emphasis on the strengths and weaknesses of courts in bringing about social changes. *(On demand)*

POLS 3119. State Politics. (3) The study of the politics of state governments in the United States using a comparative approach to analyze differences in their formal governmental structures, political climates and the processes by which public policies are adopted. *(On demand)*

POLS 3120. Southern Politics. (3) Selected political patterns and recent trends within the 11 states of the southern United States. Basic elements of continuity and change that characterize southern politics. *(On demand)*

POLS 3121. Urban Politics. (3) Analysis of the political processes in the nation's metropolitan areas and the adjustments and responses of the U.S. governmental system in attempting to cope with the urban area. *(On demand)*

POLS 3123. Religion and Politics. (3) Relation between religion and politics with emphasis on the United States. Focus upon church-state issues, attitudes of the people in various religious groups, voting behavior, and religious interest groups. *(On demand)*

POLS 3124. U.S. Domestic Policy. (3) Examination of the processes of and influences on policy making, including goals and objectives of current U.S. domestic policy. Focus on major policy areas; may include such topics as fiscal and monetary policy, education, transportation, management of national economy, and agriculture, among others. *(On demand)*

POLS 3625. Washington Seminar. (3) Prerequisite: Permission of instructor. Corequisite: POLS 3400. Students live and serve as interns in Washington, D.C. Each student will attend a series of seminars with government officials from various federal agencies, departments and Congress as well as interest groups and the media. Participation in seminars, readings related to seminars, and written reports are required. *(Summer)*

COMPARATIVE POLITICS AND AREA STUDIES

POLS 1130. Introduction to Comparative Politics. (WX) (3) Political comparisons among nations. Diverse geographical emphases, including some of the following: Latin America, the Atlantic communities of the West, Central and Eastern Europe, the Middle East, Africa, Central Asia, East Asia and Southeast Asia. *(Fall, Spring, Summer)*

POLS 3030. Topics in Comparative Politics or Area Studies. (1-4) An intensive study of a topic in comparative politics or area studies. The particular topic investigated may vary from semester to semester, and a student may take more than one course under this number. *(On demand)*

POLS 3131. The Nature of Political Change. (3) Comparative study of political change with reference to problems of reform, revolution and nation-building. *(On demand)*

POLS 3133. Women and Politics. (3) Examines the political roles of women in electoral and non-electoral political systems in diverse regions of the world. *(On demand)*

POLS 3135. Political Violence. (3) Designed to address four questions: (1) What is political violence? (2) Why does it occur? (3) What is its relationship to other political processes? (4) What is its impact on society? The emphasis of this course, while drawing on examples from contemporary American and foreign scenes, is on examining manifestations of violent political behavior such as pathological violence, conspiratorial violence, collective violence and government violence. *(On demand)*

POLS 3136. Comparative Urban Politics. (3) Urban growth, urban problems and political response in cross-national perspective. Focus on urban policy process including political explanations for variations in national urban growth and structure. Attention to selected case and comparative studies on the U.S., Europe, Latin America, Africa and Asia. *(On demand)*

POLS 3137. Political Corruption. (V) (3) The use of public office for private ends in the United States and in comparative perspective. *(On demand)*

POLS 3141. Government and Politics of Western Europe. (3) Comparative analysis of selected West European governments including Great Britain, France, Germany and Italy. *(On demand)*

POLS 3143. African Politics. (3) A comparative perspective on the politics of independence in sub-Saharan Africa and on the performance of the new political systems there in terms of national and international integration and the modernization of traditional societies and economies. *(On demand)*

POLS 3145. Government and Politics of the Soviet Union. (3) The origins of Bolshevism and the evolution of communist ideology. The structure and functions of major political institutions with emphasis on the transition of the Soviet System in facing problems of economic, political and social modernization. *(On demand)*

POLS 3147. Government and Politics of Latin America. (3) Comparative study of the political development of Latin American political systems with reference to selected aspects and problems of contemporary politics in the region. *(On demand)*

POLS 3148. Government and Politics of China. (3) The origins, development and maintenance of the Chinese political system. The organization and function of the Chinese Communist Party (CCP) and other political groups. The impact of tradition on contemporary Chinese politics. *(On demand)*

POLS 3149. Government and Politics of Japan. (3) Political behavior and development of political institutions in Japan. Emphasis on nature of political change and political process—political socialization, political culture, party systems, interest groups and public policy formation. Cross-national comparison with non-Asian democratic systems. *(On demand)*

INTERNATIONAL POLITICS

POLS 1150. Introduction to International Politics. (WX) (3) Analysis of politics among nations: material and psychological sources of national power; the role of law, force and diplomacy in world politics; problems of peace and disarmament; and international organization. *(Fall, Spring, Summer)*

POLS 3050. Topics in International Politics. (1-4) An intensive study of a topic in international politics. The particular topic investigated may vary from semester to semester, and a student may take more than one course under this number. *(On demand)*

POLS 3151. International Political Economy. (3) Political dynamics of economic relationships among industrially advanced nations. Attention is focused on the political aspects of monetary, trade, and investment relationships and the political difficulties involved in coordinating policy and maintaining effective international management. *(On demand)*

POLS 3152. Politics of Development. (3) This course examines the political factors underlying the economic relations between developed and developing nations. Attention is focused on the political forces shaping global negotiations for political and economic reform, the proposals of developing nations for the creation of a new international development strategy, and the responses of developed nations to these proposals. *(On demand)*

POLS 3153. Political Foundations of International Order. (3) The structure, processes and problems of general and regional international organizations, and the origins and contemporary role of international law. *(On demand)*

POLS 3154. Investment in Human Survival. (3) An introduction to peace and world order studies. Investigation of the major global challenges to human survival posted by population growth, food shortages, resource depletion, ecological abuse, social injustice and the military arms race. Contributions from various academic fields are drawn together to analyze the role of government in elevating the quality of domestic and international life. *(On demand)*

POLS 3155. International Studies Association Practicum. (3) Prerequisite or corequisite: POLS 3154 and permission of instructor. Membership in UNCC Student Chapter of the International Studies Association. Seminar study of peace and world order issues with special attention to American-Soviet relations; emphasizes community outreach with presentations to elevate the quality of life. Participation in the annual national convention of the International Studies Association, the major American professional organization on global issues. May be repeated for credit. *(Spring)*

POLS 3156. Great Decisions Practicum. (3) Prerequisite: permission of instructor. Preparation for and participation in the Charlotte area Great Decisions Program including the public lecture series and other local Great Decisions activities. Each student will become familiar with a range of foreign policy issues confronting the United States, engage in an in-depth study of one of those issues and serve as a discussion leader for Great Decisions study groups organized within the community. May be repeated for credit. *(Spring)*

POLS 3157. American Foreign Policy. (3) The evolution of U.S. national security interests and contemporary decision making. Explores both domestic resources and international determinants of foreign policy, and emphasizes strategic and tactical responses to the critical global problems of our time. *(On demand)*

POLS 3159. Soviet Foreign Policy. (3) The principles and practices of evolving Soviet foreign relations with emphasis on continuity and change in military capabilities and in perceptions of national security and international relations. Contemporary problems of Soviet diplomacy with major world powers, especially the United States. *(On demand)*

POLS 3161. Problems of Defense and National Security Policy. (3) Investigates major concepts of war and the problems of arms control, escalation and the proliferation of nuclear weapons. Examines trends and conditions of international conflict, technological change and domestic political environments as they relate to defense and national security. *(On demand)*

POLS 3162. International Law. (3) An historical and political analysis of the sources and development of international law. Particular attention is given to the role of modern international law in the relations of nation-states and its application to contemporary global problems. *(On demand)*

POLS 3163. Model United Nations. (3) Prerequisite: permission of instructor. Preparation for and participation in the Model United Nations (simulation of the United Nations). Includes study of the background of country to be represented; the history, structure and procedures of the United Nations; drafting of resolutions and position papers; and public speaking and caucusing. May be repeated for credit. *(Spring)*

POLS 3165. East Asia in World Affairs. (3) Examines the political factors governing diplomatic relations, national order, economic trade and national security in East Asia. Emphasis on China, Taiwan, Hong Kong, Japan, the Korean peninsula and the Philippines. *(On demand)*

POLITICAL PHILOSOPHY

POLS 3070. Topics in Political Philosophy. (V) (3). Analysis of a selected problem in contemporary political philosophy or in the history of political philosophy. Includes moral and ethical evaluation of political and social practices and institutions. Readings from classic texts or contemporary works. Topic for consideration changes from semester to semester. Course may be repeated with permission of instructor. *(On demand)*

POLS 3171. History of Classical Political Philosophy. (V) (3) Major concepts and systems of political philosophy of Ancient Greece and Rome. *(On demand)*

POLS 3173. History of Modern Political Philosophy. (V) (3) Major concepts and systems of western political philosophy from the 16th-19th century. *(On demand)*

POLS 3175. Law, Justice and Morality. (V) (3) An analysis of such law-related issues as justification for criminal punishment, the obligation to obey the law, the enforcement of morals, and war and morality. *(On demand)*

POLS 3177. Social and Political Philosophy. (C) (3) Philosophical concepts involved in understanding and evaluating the basic structure of societies (e.g., economic, educational, legal, motivational and political) including equality, fraternity, freedom and rights. Relevance to contemporary social and political issues stressed. Readings from classical and contemporary sources. Same as PHIL 3226 and taught by the Philosophy Department. *(On demand)*

PUBLIC ADMINISTRATION

POLS 3183. Administrative Behavior. (3) The role of the administrator and public bureaucracy in modern democratic society. Particular attention will be given to the interplay of forces created by executives, legislators, political parties and interest groups. *(On demand)*

POLS 3184. Decision Making in Public Administration. (3) Examination of major schools of decision making theory: rationalism, incrementalism and mixed-scanning. Use of these approaches in public administration in budgeting, organization and program design, and personnel will be studied, using problem sets and simulation techniques. *(On demand)*

RESEARCH IN POLITICAL SCIENCE

POLS 3220. Research Methods in Political Science. (4) Prerequisites: (1) junior standing; (2) nine hours of political science, three each in American politics, international relations, and comparative politics and; (3) STAT 1222 or equivalent. An introduction to research methods in political science to include a brief consideration of the following topics: philosophy of science; the place of research methods in the discipline of political science; research design; research strategies and techniques; data interpretation. Three lecture hours and one two-hour lab period per week. *(Fall, Spring)*

POLS 3990. Senior Thesis. (W) (3) Prerequisite: POLS 3220. The student completes an article-length research paper under the supervision of a member of the faculty. The paper must involve quantitative or other methods of modern political analysis. *(Fall, Spring)*

INTERNSHIP AND INDEPENDENT STUDY

POLS 3400. Internship in Political Science. (3-6) Practical experience in politics by working for a party, campaign organization, political office holder, news medium, government agency or other political organization. Minimum of 150 working hours for three hours credit; minimum of 300 working hours for six hours credit. No more than six credits may be received through this course. *Pass/No Credit* grading only. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

POLS 4800. Independent Study. (1-3) (1-3G) Prerequisite: consent of the instructor. Supervised investigation of a political problem that is (1) of special interest to the student; (2) within the area of the instructor's special competence; and (3) normally an extension of previous coursework with the instructor. A student may take more than one course under this number but not more than three hours a semester. *(Fall, Spring, Summer)*

Department of Psychology

Acting Chairperson: Associate Professor Siegfried; *Professors:* Calhoun, Cann, Diamant, Goolkasian, Grimsley, Maisto, Selby, Simono, Terry, Toner; *Associate Professors:* Cook, Fernald, Gilmore, Lamal, Lee, Long, Sohn, Tedeschi, Wachowiak, Windholz; *Assistant Professors:* Buch, Kaplan, McAnulty, Morris, Pruitt, Stanley Hagan, Van Wallendael; *Lecturers:* Batchelor, Kappius; *Adjunct Professor:* Himelein

Psychology is the study of behavior. Psychologists are interested in discovering new knowledge about human and animal behavior and in applying that knowledge. Some of the questions psychology considers are:

How do we learn?
Why do people develop behavior disorders?
What are the changes involved in moving from infancy to adulthood?
How do other people influence our behavior?
How is behavior regulated by the brain?
How do we perceive the physical world?

Psychology is a young and a dynamic science and profession. Most of what we know has been learned in this century. Much is left to be learned by the psychologists of the future.

The Psychology Department offers an undergraduate major and a minor in psychology, as well as a Master of Arts degree. The primary objective of the undergraduate program is to provide a solid background in the fundamentals of psychology as a science. Graduates of the program should be prepared for a variety of careers or for graduate study.

Although many careers in psychology require an advanced degree, opportunities for individuals with a bachelor's degree in psychology include serving as a teacher or psychological assistant in social service agencies, mental health centers, child care centers, centers for the retarded or the emotionally disturbed, and juvenile delinquent or predelinquent homes. Students whose interests are more laboratory-oriented might become laboratory technicians or research assistants. Also, many psychology majors find their skills useful in various areas of business, such as management, advertising, personnel, public relations and sales.

Graduate school is a possibility after the student completes the B.A. degree. For a psychologist with a master's degree or doctorate, the career opportunities grow. (See *The Graduate School* section in this *Catalog* for information on the M.A. program.) In addition, many psychology graduates broaden their skills by attending graduate schools in the areas of business, counseling, criminal justice, education and law.

BACHELOR OF ARTS

A major in Psychology leading to the B.A. degree consists of 29 hours of psychology. These hours must include General Psychology (1101 and 1101L), Research Methodology (2102), History and Systems (3103), a senior seminar (3612, 3613, 3619, 3625, 3630, 3650, 3655, 3670) and two courses from each of the following lists:

Experimental Options

Hereditary Behavior (3117)
Introduction to Behavior Modification (2112)
Comparative Psychology (3110)
Psychology of Learning (3111)
Motivation (3114)
Sensation and Perception (3115)
Human Cognitive Processes (3116)
Physiological Psychology (3113)
Basic Processes in Psychological Assessment (3140)

Developmental/Social/Applied Options

Child or Adolescent Psychology (2120, 2121)
Adjustment or Abnormal Psychology (2150, 3151)
Industrial/Organizational Psychology (2171)
Social Psychology (3130)
Psychology of Personality (3135)

The additional courses necessary to fulfill the 29-hour requirement of the major should be selected to aid the student in the attainment of personal goals. However, the student cannot include more than three hours credit in PSYC 3405 and three hours credit in PSYC 3806 in the 29-hour requirement of the major, nor will the student be allowed to take more than eight hours in PSYC 3405 or PSYC 3806.

Other specific course requirements for majors are STAT 1222 (Elements of Statistics) and six hours of coursework approved for Goal VI (Understanding the Individual, Society, and Culture) exclusive of psychology courses. All majors must satisfy the University general education requirements or specific requirements for the B.A. degree. For more information on requirements, see pages 63-67.

The student must also develop an area of related work which consists of 18 semester hours to be arranged by the student and the faculty adviser. Related work should be considered in terms of the fulfillment of the individual's vocational and educational goals. The completion of a minor or second major fulfills the related work requirement. Students who receive **teacher certification** may use the education sequence as related work.

Course Sequences Within the Major. The Psychology Department offers course sequences designed to provide a more in-depth exposure to certain areas of psychology. Sequences are currently available in **Behavior Modification, Child Psychology, Clinical Psychology, Industrial Psychology** and **Psychometrics.** Detailed information about these sequences is contained in the Psychology Department Student Handbook which is available in the Psychology Office.

PSYCHOLOGY MINOR

A minor in psychology consists of 19 semester hours of psychology to include PSYC 1101, 1101L and a minimum of one course from both the experimental options group and the developmental/social/applied group. A minimum of six hours of coursework at the 3000 level or above is required. No more than three semester hours of PSYC 3806 may be counted toward the minor and PSYC 3405 may not be used for the minor.

SUGGESTED SCHEDULE: B.A. DEGREE

Freshman Year

PSYC 1101 3	PSYC Elective 3
PSYC 1101L 1	STAT 1222 3
MATH 1100 or 1101 3	ENGL 1102 3
ENGL 1101 3	Elective 6-7
Elective 3-4	

Sophomore Year

PSYC 2102 4	PSYC Elective 3
PSYC Elective 3	Related Work 3
Related Work 3	Elective 9-10
Elective 9-10	

Junior Year

PSYC Elective 3	PSYC Elective 3
Related Work 3	Related Work 3
Elective 9	Elective 9

Senior Year

PSYC 3103 3	PSYC Seminar 3
Related Work 3	Related Work 3
Elective 9	Elective 9

Note: Elective hours should be chosen to meet the UNCC General Education Requirements.

PSYCHOLOGY (PSYC) COURSE DESCRIPTIONS

PSYC 1101. General Psychology. (SC) (3) A survey of the field including such topics as learning, emotions, motivation, personality, psychological testing and abnormal behavior. Emphasis on psychology as a behavioral science. May be taken with or without the lab. All psychology majors and those who wish to apply this course as partial fulfillment of the University science and technology (GOAL IV) requirement must take PSYC 1101L during the same semester in which they take PSYC 1101. *(Fall, Spring, Summer) (Evenings)*

PSYC 1101L. General Psychology Laboratory. (S) (1) An introduction to laboratory equipment and procedures. Meets two hours per week. (May not be taken apart from the lecture portion of PSYC 1101 except by permission of the Department.) *(Fall, Spring, Summer) (Evenings)*

PSYC 2102. Research Methodology. (W) (4) Prerequisites: PSYC 1101 and 1101L, and STAT 1222. Experimental, observational and correlational methods of psychological research. Basic concepts of philosophy of science will also be discussed. Emphasis on methodology rather than content and applicability of methods to current topics in psychology. Three lecture hours and one two-hour laboratory period a week. *(Fall, Spring)*

PSYC 2109. Educational Psychology. (3) Prerequisite: PSYC 1101. The psychology of learning; problems related to concept formation and application of behavior modification techniques to the classroom. *(Fall, Spring, Summer)*

PSYC 2112. Introduction to Behavior Modification. (4) Prerequisite: PSYC 1101. Methods and constructs of behavior modification including the application of the methods to laboratory research. Three lecture hours and one two-hour laboratory period a week. *(Fall)*

PSYC 2120. Child Psychology. (WC) (3) Prerequisite: PSYC 1101. Psychological development in infancy and childhood, including the development of learning, thought, language, social relations, intelligence and morality. Remedial measures suggested in dealing with early child tendencies which might otherwise lead to severe academic and social difficulties. *(Fall, Spring, Summer)*

PSYC 2121. Adolescent Psychology. (3) Prerequisite: PSYC 1101. Developmental and psychological characteristics of adolescence with emphasis on research methods and familiarity with case studies, school and personality problems. *(Fall, Spring)*

PSYC 2150. Psychology of Adjustment. (V) (3) Prerequisite: PSYC 1101. The study of the process of adjustment. Consideration is given to psychological reactions to critical problems encountered in modern life. Introduction to different approaches to psychotherapy. *(Fall, Spring, Summer)*

PSYC 2171. Introduction to Industrial/Organizational Psychology. (3) The study of people at work; what motivates people to work and what leads to satisfaction, alienation or performance; how to lead others; the structure of an organization and processes of communication, decision making and conflict; socialization through selection and training; measurement of individual contributions; the design of work itself; ways to change and develop entire organizations. *(Fall, Spring, Summer)*

PSYC 3001. Topics in Psychology. Prerequisite: consent of the instructor. Examination of special psychological topics. May be repeated for credit as topics vary.

PSYC 3103. History and Systems of Psychology. (3) Prerequisite: PSYC 1101. Influential psychological systems and their historical antecedents. Emphasis on Gestalt, psychoanalytic and behavior theory.

PSYC 3110. Comparative Psychology. (3) Prerequisite: PSYC 1101. Animal and human behavior from a comparative point of view. Emphasis on the classification of behavior patterns as well as the origin and development of these patterns. *(Spring)*

PSYC 3111. Psychology of Learning. (3) Prerequisite: PSYC 1101. (Completion of PSYC 2102 is strongly recommended.) Major theories and empirical findings in the area of learning. *(Fall, Spring, Summer)*

PSYC 3112. Consequences and the Sources of Behavior Control. (4) Prerequisite: PSYC 2112. Application of the principles and techniques of the experimental analysis of behavior to a variety of behavior problems in a number of different environments with an emphasis on extrapolation to new and different problems and settings. (Students will be required to develop individualized projects utilizing the material discussed in class.) *(On demand)*

PSYC 3113. Physiological Psychology. (3) Prerequisite: PSYC 1101. The relationship of physiological systems to integrated behavior. Emphasis on neural aspects of behavior and current studies in relation to drug and other stimuli. *(Fall, Summer)*

PSYC 3114. Motivation. (3) Prerequisite: PSYC 1101. Current theories and research in the area of human and animal motivation. *(Yearly)*

PSYC 3115. Sensation and Perception. (3) Prerequisite: PSYC 1101. (Completion of PSYC 2102 is strongly recommended.) Sensory and perceptual processes, including such topics as psychophysics, information processing and color. *(Fall, Spring)*

PSYC 3116. Human Cognitive Processes. (C) (3) Prerequisite: PSYC 1101. Processes involved in such complex human behaviors as language (acquisition and usage), memory and problem solving with emphasis upon experimental findings and current theories. *(Fall, Spring)*

PSYC 3117. Hereditary Behavior. (3) Prerequisite: PSYC 1101. Potential genetic and environmental contributions to behavior and psychological processes. History of the nature-nurture issue in psychology; animal and human research methods; statistical analysis of behavior-genetic data; and the heritability of learning ability, intelligence, personality and psychopathology. *(Spring)*

PSYC 3118. Research Methods in Physiological Psychology. (4) Prerequisites: PSYC 1101 and permission of the instructor. Current laboratory techniques in physiological psychology, including basic surgeries, lesioning, stimulation, recording and histology. Three lecture hours and one two-hour laboratory period a week. *(On demand)*

PSYC 3122. Cognitive and Language Development. (3) Prerequisites: PSYC 1101 and 2120. Development of language, thought and related behaviors in children, including information processing, Piaget's theory of cognitive development, acquisition of sentence structure, and biological foundations of language. *(Alternate years)*

PSYC 3123. Social and Personality Development. (3) Prerequisites: PSYC 1101 and 2120. Social and personality development of children, including infant social behavior, socialization practices, independence and achievement, aggression, sex-role development and moral development. *(Alternate years)*

PSYC 3124. Psychology of Adult Development and Aging. (C) (3) Prerequisite: PSYC 2120 or 2121, or equivalent. Psychological development through adulthood and old age. Emphasis on processes underlying continuity and change in adulthood, including personality and socialization, cognitive development and the psychophysiology of aging. *(Yearly)*

PSYC 3130. Social Psychology. (C) (3) Prerequisite: PSYC 1101. The social behavior of individuals. Individuals' behavior in relation to others. Attitude change, social conflict, social interaction, social perception and social influence processes; general theories of social behavior and research approaches. *(Fall, Spring, Summer)*

PSYC 3135. Psychology of Personality. (C) (3) Prerequisite: PSYC 1101. Current personality theories. Consideration given to psychoanalytic, physiological, trait and factor, the perceptual viewpoints in the light of contemporary research. *(Fall, Spring, Summer)*

PSYC 3140. Basic Processes in Psychological Assessment. (3) Prerequisites: PSYC 1101 and 1101L, and MATH 1222. Psychological testing, including scaling procedures, reliability and validity, correlational techniques used in test construction, a review of various kinds of psychological tests and basic approaches to test interpretation. *(Alternate years)*

PSYC 3150. Introduction to Clinical Process. (4) Prerequisites: PSYC 2150 and 3151. Theories of behavior intervention including behavioral management, crisis intervention and clinical assessment. The course includes a two-hour lab, involving behavioral rehearsal and practical training techniques. *(Fall)*

PSYC 3151. Abnormal Psychology. (C) (3) Prerequisite: PSYC 1101. A history of psychopathology. Case studies, differential diagnosis, psychological dynamics of abnormal behavior, including theoretical, clinical and experimental contributions in the field. *(Fall, Spring, Summer)*

PSYC 3152. Child Psychopathology. (3) Prerequisites: PSYC 1101, 2120 and 3151 or the equivalent. Principles of classification, assessment and treatment of children and adolescents who display deviant affective, cognitive and social behavior. *(Alternate years)*

PSYC 3155. Community Psychology. (3) Social forces, particularly within the context of organizations and/or communities, which affect the development of psychopathology and/or personal competency, with emphasis on preventing psychopathology and increasing competency. Topics include the concept of prevention; assessment of organizations; communities and other environments; methods of instituting organizational and community change; evaluating the effects of community interventions; social policy analysis; and ethical issues involved in community work. *(Spring)*

PSYC 3172. Psychology of Personnel: Employee Selection and Classification. (3) Prerequisite: PSYC 2171 or consent of instructor. Methods, techniques and procedures used to select and classify employees. *(Fall)*

PSYC 3173. Psychological Bases of Training Programs. (3) Prerequisites: PSYC 1101 and 2171, or consent of instructor. Application of alternative theories about adult learning to the development and conduct of training programs in industry. Topics include how to develop training needs, a description of methods available to trainers such as programmed instruction and sensitivity training, and how to evaluate the effects of various training techniques. *(Spring)*

PSYC 3405. Practicum in Applied Psychology. (1-4) Prerequisites: junior standing and permission of the instructor and the Psychology Department. Work in practical settings related to psychology under the supervision of a faculty member. May be repeated for credit with departmental permission. The student must have obtained approval in the semester preceding the semester in which the practicum is to be taken. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

PSYC 3612. Seminar in Behavior Modification. (3) Prerequisites: PSYC 2112 and 3112. Current issues in behavior modification, including an integration of principles, techniques and practical experiences. *(On demand)*

PSYC 3613. Seminar in Physiological Psychology. (3) Prerequisites: PSYC 1101 and permission of the instructor. Intensive study of selected topics in physiological psychology, such as psychopharmacology, biofeedback and the neuro-physiological basis of learning and memory. *(Spring)*

PSYC 3619. Seminar in Experimental Psychology. (3) Prerequisites: PSYC 1101 and permission of the instructor. In-depth examination of an area of current concern in the psychological laboratory. Each semester will have a different focus such as discrimination, learning, memory, experimental analysis of behavior and attention. *(Fall)*

PSYC 3625. Seminar in Developmental Psychology. (3) Prerequisites: PSYC 1101 and permission of the instructor. Concentrated examination of current issues and research in a field of developmental psychology including such topics as the concepts of development in historical and current usage, learning (especially in human infants), development of social relations, intelligence, cognitive abilities and the acquisition of language. *(Fall, Spring, Summer)*

PSYC 3630. Seminar in Social Psychology. (3) Prerequisites: PSYC 1101 and permission of the instructor. Intensive study at the advanced level of topics of current research and theoretical interest in social psychology. *(Spring)*

PSYC 3650. Seminar in Human Adaptation and Behavior. (3) Prerequisites: PSYC 1101 and permission of the instructor. Intensive reading and discussion in selected areas of psychology, such as stress, personality, emotions and psychopathology. *(Fall, Spring)*

PSYC 3655. Seminar in Community Psychology. (3) Prerequisites: PSYC 2150 and 3151 or permission of the instructor. Application of psychological research findings to specific problems in the community with emphasis on problems hypothesized directly to affect psychological well-being. *(Alternate years)*

PSYC 3670. Seminar in Industrial Psychology. (3) Prerequisites: PSYC 2171 and consent of instructor. Topics of current concern in industrial/organizational psychology and related disciplines including issues that affect individuals at work and organizations in society. *(Fall, Spring, Summer)*

PSYC 3806. Individual Studies in Psychology. (1-4) Prerequisites: permission of the instructor and the Department. Directed individual study which may take the form of initiating, designing and conducting an original research problem or a critique and synthesis of existing research. May be repeated for credit. The student must have obtained approval in the semester preceding the semester in which the course is to be taken. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

PSYC 4140. Tests and Measurements. (3) (3G) Prerequisite: PSYC 1101. Psychological and educational measurements in current use with emphasis on structure, administration and application of group tests. Individual tests such as Stanford-Binet, WISC and WAIS will be reviewed. *(Alternate years)*

Courses for Graduate Students and Advanced Undergraduates

PSYC 5006. Selected Topics in Psychology. (3) (3G) Prerequisite: junior, senior or graduate standing. Examination of special psychological topics. *(On demand)*

PSYC 5152. Psychology of Exceptional Children. (3) (3G) Assessing and treating the exceptional child. Emphasis on current research in several diagnostic categories, including the emotionally disturbed, learning disabled, mentally retarded, physically handicapped and gifted. *(Alternate years)*

PSYC 5153. Psychology of Mental Retardation. (3) (3G) Psychological and sociological aspects of mental retardation in relation to adjustment and educational development. Emphasis on current research and diagnostic categories. *(Alternate years)*

Department of Religious Studies

Chairperson: Associate Professor St. Clair; *Professors:* Meyer, Underwood, Witherspoon; *Associate Professors:* Gestwicki, Getz, Thomas, White; *Assistant Professors:* Johnson, Tabor

Religious Studies is an inquiry into the fundamental stories, myths, symbols and practices by which we as human beings have attempted to make sense out of ourselves and the worlds in which we live. Besides offering courses in Eastern and Western, ancient and modern religious traditions, the Department offers a number of courses that explore religious meaning in a variety of creative ways, through the study of myth and symbol, art and language, film and dreams. Attention is given to a wide range of attempts to deal with the ultimate questions about the nature of the cosmos, the nature of human beings, and the origins and destiny of human life. This wide-ranging emphasis places religious studies in dialogue with all the methods and disciplines of the liberal arts. The Department of Religious Studies makes an explicit commitment to free, non-dogmatic inquiry into religion from a pluralistic and cross-cultural perspective.

Most students major or minor in religious studies to gain a broad liberal arts education. With the flexibility of the program and its relationship to other areas of The University, students can meet the specific objectives of Religious Studies while taking a wide range of courses in other departments. Some students relate religious studies to definite vocational plans, often requiring further education in professional and graduate schools.

BACHELOR OF ARTS

A student may satisfy the requirement for the religious studies major leading to the B.A. degree after completing either of the following programs:

(A) Course Program in Religious Studies. A student who elects this option will be expected to complete a minimum of 30 semester hours, which will normally include the following: 1101, 2101, 2102 and the Senior Seminar (3600), for a total of 12 hours. The 18 hours remaining to be completed for the major are expected to give the student a substantial breadth in religious studies. Within these guidelines, the student will develop the course of study in consultation with his or her adviser. Advising sessions with the entire Department may be arranged by the student and/or adviser to consider special requests or problems pertaining to the nature of an individual student's program.

(B) Interdisciplinary Program in Religious Studies. This option is intended to provide a course of study which will make maximum use of the interdisciplinary aspects inherent in religious studies. After several courses in religious studies, a student may submit, after consultation with his or her adviser, a proposal for a program of study for the junior and senior years. If the proposal is approved by the Department, the student will satisfy the requirement for a major in religious studies by completing the approved program rather than by taking any specified number of religious studies courses. This is not an honors program, and any student may submit a proposal to the Department. A detailed description of this program may be obtained from the office of the Department of Religious Studies.

RELIGIOUS STUDIES MINOR

A minor in religious studies consists of a minimum of 15 hours including RELS 1101 and at least two courses beyond the 2000 level. With the help of an adviser in Religious Studies, the student will select courses in at least two different areas of the discipline. Students are encouraged to take RELS 3600, though it is not required.

RELIGIOUS STUDIES (RELS) COURSE DESCRIPTIONS

Courses for Undergraduates

RELS 1101. An Introduction to Religious Studies. (VL) (3) An introduction to the study of the religious dimensions of human existence. *(Fall, Spring, Summer) (Evenings)*

RELS 1110. The Long Search. (V) (3) A survey of the major religions of the world based on the film series *The Long Search.*

RELS 2101. Introduction to Western Religious Thought. (VL) (3) The major religions, myths, symbols, ideas and traditions that have informed the fundamental ways people in the West have seen themselves in the world. *(Yearly)*

RELS 2102. Introduction to Asian Religions. (LX) (3) Selected religions of Asia such as Islam, Hinduism, Buddhism, and Chinese and Japanese religions. Special emphasis on their world views as expressed in the functional use of myth and symbol in the tradition. *(Fall, Spring, Summer)*

RELS 2104. Hebrew Scriptures/Old Testament. (VL) (3) The Hebrew religious tradition from the perspective of its development in the culture of the ancient Near East. *(Yearly)*

RELS 2105. New Testament and Christian Origins. (VL) (3) Emergence of Christianity in its cultural context. Analysis of selected early Christian writings in English translation. *(Yearly)*

RELS 2108. Religion in American Culture. (C) (3) The role of religion in the shaping of American culture. *(Fall, Spring)*

RELS 3000. Topics in Religious Studies. (3) Treatment of a special topic in religious studies. May be repeated for credit as topics vary.

RELS 3010. Major Figure in Religious Studies. (3) The life and works of a major figure who has contributed to religious studies. May be repeated for credit for different figures.

RELS 3101. Greek Myths and Religions. (WL) (3) The gods and goddesses, heroes and heroines in ancient Greek myths and religions; Greek myth and later Western religions; polytheism and monotheism; functions of myth; contemporary interpretations of Greek myth. *(Yearly) (Evenings)*

RELS 3104. Hebrew Prophetic Religion. (3) Prerequisite: RELS 2104 or consent of the instructor. The historical development of the prophetic movement from its origins to its culmination in the classical prophets of the eighth to sixth centuries B.C.

RELS 3107. The Psalms and Wisdom Literature of Israel. (3) Prerequisite: RELS 2104 or consent of the instructor. The origin and content of the Psalms and the place of wisdom literature in the development of Hebrew thought.

RELS 3110. Judaism. (3) The development of Jewish religious thought from antiquity to the present.

RELS 3113. Jesus. (3) Prerequisite: RELS 2105 or consent of the instructor. Jesus and the religion he taught from the point of view of the synoptic gospels. *(Alternate years)*

RELS 3116. Paul. (3) Prerequisite: RELS 2105 or consent of the instructor. The writings of St. Paul. The occasion, purpose and significance of each letter for the emerging Christian community. *(Alternate years)*

RELS 3119. Christianity through Art and Architecture. (3) Christian history from the catacombs to the 20th century. Focus on religious expression in pictorial art, architecture and sculpture. *(Alternate years)*

RELS 3122. Western Esoteric Traditions. (3) Traditions which emphasize that the highest wisdom is found in the inner self: gnosticism, mysticism, hermeticism, grail legends, alchemy.

RELS 3125. Medieval Christianity. (3) Christianity in the context of the culture of the High Middle Ages (1050-1350 A.D.).

RELS 3131. Islam. (3) The development of the traditions in Islam with emphasis on Islamic culture, literature and mysticism. *(Alternate years)*

RELS 3134. Studies in Western Religious Thought. (3) Selected works of major religious authors in the West.

RELS 3135. Religion in Nineteenth-Century America. (3) Examination of religious thought, practices, and movements in 19th-century America.

RELS 3137. Contemporary African-American Religions. (3) African-American religion since World War II. Emphasis on the influence of religion and religious leaders in the struggle for a Black humanity. *(Alternate years)*

RELS 3150. The Black Church/Civil Rights Movement. (3) Role of the black church in the struggle for human equality. Topics such as radical, moderate, and accommodationist leadership styles; historical development of the black church in the South; and its emergence as a foundation for modern civil rights movement. (Same as AAAS 3150). *(Fall)*

RELS 3151. Primitive Religions. (3) Religious conceptions of prehistoric humans as found in painting, sculpture, artifacts, burial practices, etc. Two or three selected examples of tribal religion in the modern period.

RELS 3154. Hinduism. (3) The ancient Vedic traditions and the development of Hinduism. Emphasis is on the role of Hinduism in Indian civilization. *(Yearly)*

RELS 3157. Buddhism. (3) The historical development of Buddhism with special attention given to its diverse manifestations in South Asia. *(Alternate years)*

RELS 3160. Tibetan Religion. (3) Prerequisite: RELS 2102 or consent of the instructor. The symbols, beliefs and practices of the Tibetan tradition. The fusion of the ancient native religion and Buddhism.

RELS 3163. The Religious Art and Architecture of India. (AX) (3) The visual art of Hindus, Buddhists, Jainas and Muslims in the architecture, paintings and sculptures of India. *(Alternate years)*

RELS 3166. Taoism. (3) Philosophical Taoism as nature mysticism. Comparison with nature mystics in the West. *(Alternate years)*

RELS 3169. Zen Buddhism. (3) Prerequisite: RELS 2102 or consent of the instructor. Buddhist origins in India, development of the Ch'an (Zen) school in China and Japan, and emphasis on the formative influences of Zen on Japanese art and culture. *(Alternate years)*

RELS 3172. Religion in Asian Literature. (3) Religious ideas and themes in the literature of Asia. Examples chosen from such literary forms as the novel, the short story, autobiography, drama and poetry.

RELS 3201. The Meaning of Death. (3) An investigation into the experience of death in the Western tradition. Philosophical, religious, existential, psychological and literary readings clarifying the conceptual problems in our ways of speaking about death. Understanding death as a horizon for understanding life. (Same as PHIL 3201.) *(Yearly)*

RELS 3202. The Limits of Language. (3) What it means to be a linguistic creature living in a symbolic world.

RELS 3204. Life-Study. (WV) (3) An appreciation of the religious dimension in a human life-history. Based on concepts, principles and methods developed by Ira Progoff for working within the life-history of a person who lived in a previous generation. *(Yearly) (Evenings)*

RELS 3205. Intensive Journal. (WV) (3) Prerequisite: permission of the instructor. An appreciation of the religious dimension in one's own life-history. Based on the concepts, principles and methods developed by Ira Progoff for working within one's own life-history. *(Yearly) (Evenings)*

RELS 3206. Images and Experience. (3) The relationship between religious experience and images, as manifested privately (dreams, fantasies, ideals) and publicly (religion, myth, art).

RELS 3209. Quest in Literature. (3) The spiritual dimension of contemporary and traditional literature. Focus may be on an artist, genre (novel, poetry, drama) or theme.

RELS 3212. Films and Identity. (3) Themes of religious identity, alienation, search, discovery, sexuality and death as reflected in recent American movies and foreign films. Film laboratory required.

RELS 3215. The Artist as Visionary. (3) The role of visual imagination in the development of religious sensibilities. *(Alternate years)*

RELS 3218. Jung and Religion. (L) (3) The works of C.G. Jung as they relate to an understanding of religion and religious experience. Emphasis on his interpretations of myths and symbols as they appear in both Western and non-Western religions. His theories of creativity and the arts, religious expressions and quests for meaning. *(Yearly) (Evenings)*

RELS 3221. Religion and Psychology. (3) Views of the self in relation to traditional religious views, particularly in the works of such people as Freud, Jung, Brown, Erikson, Skinner.

RELS 3224. Science, Technology and Human Vision. (3) The relationship of science and religion, the place of the individual in a technological society and the visions of the scientific future.

RELS 3230. Languages of Sacred Texts. (3) Prerequisite: consent of the instructor. The language and literature of a particular religious tradition. Aims at a level of proficiency to begin reading the sacred writings of a religion in the original language (Koine Greek, Biblical Hebrew, Classical Chinese, Sanskrit). May be repeated for credit when the subject matter changes. (Same as FORL 3050.) *(On demand)*

RELS 3242. Philosophy of Religion. (3) Philosophical implications of religious experience including the definitions, development and diverse forms of the problems of belief and reason in modern thought. (Same as PHIL 3242.) *(On demand)*

RELS 3600. Senior Seminar. (W) (3) Required of majors in final year of studies. Others may be admitted with consent of the instructor. *(Fall)*

RELS 3800. Independent Studies. (1-3) Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

RELS 4000. Topics in Religious Studies. (3) (3G) Prerequisite: consent of the instructor. May be repeated for credit.

RELS 4101. Religion and Modern Thought. (3) (3G) The interaction of modern thought and modern religious sensibilities. *(Alternate years)*

Courses for Graduate Students Only

RELS 6800. Directed Studies. (3G) Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

Department of Sociology, Anthropology and Social Work

Chairperson: Professor Zahn; *Professors:* Dubisch, Goodnight, Michalowski; *Associate Professors:* Bonney, Carlton-LaNey, Ferraro, Forrest, Hutchison, Lance, Levy, Pearson, Reichs; *Assistant Professors:* Aulette, Carlson, MicKelson, Scheid-Cook; *Adjunct Professor:* May

The Department of Sociology, Anthropology and Social Work offers academic majors in Anthropology and Sociology leading to a Bachelor of Arts degree, and a major in Social Work leading to a Bachelor of Social Work degree. On the graduate level, the Department offers the M.A. degree in Sociology.

Anthropology. Anthropology is the study of humans and their cultures and is organized into four subfields: cultural anthropology, archeology, physical anthropology and linguistics. It focuses upon human cultural heritage and history and upon the biological and evolutionary aspects of humans which relate to cultural development. It emphasizes the comparative study of humans and the cross-cultural analysis of their institutionalized responses to fundamental human needs.

The study of anthropology is relevant for persons whose occupations and endeavors require an understanding of a variety of cultures. It is particularly useful for teachers of students from diverse cultural backgrounds, social workers and persons seeking careers in journalism and communications as well as persons who plan to work in or with foreign countries. It provides competencies needed for employment in such organizations as museums, highway departments (as archeologists), police departments (as physical anthropologists), the park service and the Bureau of Indian Affairs.

Sociology. Sociology is the scientific study of human social life. It focuses upon the forces which organize and structure societies and smaller groups as well as the forces which disorganize and threaten to dissolve them. As a science, sociology applies an objective and systematic method of investigation to identify the patterns and forms of social life and to understand the processes by which they are established and changed.

The study of sociology is attractive to persons seeking a liberal education and immediate employment as well as to persons preparing for further study and professional careers. As a liberal arts program, it enables students to understand the social contexts in which they find themselves and the social forces that shape personality, actions and interactions with others. As a pre-professional program it provides an excellent background for persons entering social work, law, teaching, the ministry, journalism, planning, public relations and personnel services. It also provides analytical skills related to market research and program evaluation in human services, sales, management and other business activities.

Social Work. Social work includes the study and enhancement of human social interaction. It focuses upon the prevention, treatment and control of problems in the social life of individuals, groups and communities. It blends knowledge from the social and behavioral sciences with social work theory and skills in the professional application of the helping relationship. The study of social work prepares persons for further study and careers in social welfare, including direct social service, family counseling and crisis intervention. It provides an excellent background for careers involving the planning, administration and evaluation of social services. It also provides knowledge and skills utilized by vocational rehabilitation counselors, probation and parole officers, medical and psychiatric social workers and other members of community and industrial social service organizations. A Bachelor of Social Work (B.S.W.) degree prepares students for entry-level professional positions in social work practice.

ANTHROPOLOGY MAJOR: BACHELOR OF ARTS

A major in anthropology leading to the B.A. degree requires completion of 34 semester hours of anthropology, including ANTH 1101, 2141, 2151, 3101 and 3601; 18 semester hours of electives in anthropology, including at least six semester hours in cultural anthropology; and completion of ANTH 3601 with a grade of *C* or better. Also required are 18 semester hours of related work to be arranged in consultation with the student's adviser and organized around a region, an allied discipline or theme, or minor in another approved discipline. Students should consult the Department of Sociology, Anthropology and Social Work concerning internships and field schools in anthropology.

Anthropology Minor. The minor in anthropology requires the completion of 18 hours of anthropology including ANTH 1101 and 15 hours of electives with at least one course in each of

three subdivisions of anthropology: cultural anthropology, physical anthropology, and archaeology. A grade point average of at least 2.0 is required in the 18 hours of anthropology.

MUSEUM STUDIES

The Museum Studies program is designed to prepare students for entry-level positions in the museum profession. Students participating in the Museum Studies program are required to major in an academic discipline such as Anthropology, Art, Biology, Business, Chemistry, Earth Science, Education, English, History or Physics, and to fulfill all requirements for that major. Students interested in the Museum Studies program should contact the Museum Studies Coordinator in the Department of Sociology, Anthropology and Social Work for further information.

Museum Studies Minor. The Museum Studies minor requires at least 18 semester hours including 12 hours of core museum courses, an internship experience or special project for 3-6 hours in the senior year and appropriate electives. A list of courses recommended as electives is available from the Museum Studies Coordinator.

Transfer students with courses in museum studies may apply those courses towards Museum Studies electives or, upon evaluation of transcripts and course contents by the Museum Studies Coordinator and Advisory Board, toward appropriate core courses in Museum Studies.

SOCIOLOGY MAJOR: BACHELOR OF ARTS

A major in sociology leading to the B.A. degree consists of (1) a minimum of 32 semester hours of sociology; (2) a core curriculum of SOCY 1101, 3153, 4155, and 4156; (3) at least 23 hours at the 3000 and/or 4000 level (but may include 2090); (4) a distribution of elective courses selected from at least three of the following sub-areas: **Analysis** (SOCY 4154, 4656), **Community** (SOCY 4122, 3125, 4125, 4620, 5625), **Organizations** (SOCY 4111, 4115, 4112, 4135), **Process** (SOCY 3143, 4161, 4263, 2112, 3162), **Problems** (SOCY 2171, 3110, 4110, 4172, 4173, 3173), **Family** (SOCY 2132, 4632, 4163, 4261); and (5) a minimum of 18 semester hours of related work.

Related work is arranged by the student in consultation with an adviser and may consist of a concentration of courses: (1) within a single discipline; (2) selected from two complementary disciplines; or (3) focused upon a specific topic. Students in the **teacher certification program** may use the courses in the professional education sequence as their related work. Students should consult with the Department of Sociology and Anthropology about internship opportunities in sociology.

Sociology Minor. The minor in sociology requires the completion of 18 hours in sociology including Introduction to Sociology and a theory course (SOCY 3153 or 4154 or another approved course). A grade point average of at least 2.0 is required in the 18 hours of sociology.

Honors Course. The Department offers an honors section of "Introductory Sociology," which is designed to introduce honors students to the basic ideas and methods of sociology. There are no course prerequisites for enrollment. Admission may be initiated by interested students or the Department.

SOCIAL WORK MAJOR: BACHELOR OF SOCIAL WORK

A major in social work leading to the B.S.W. degree consists of: (1) a minimum of 38 semester hours of social work, including a core curriculum of SOWK 2180, 2182, 2183, 3181, 3182, 3183, 3280, 3482, 3484, 3683, 3685, and one social work elective; (2) SOCY 1101, 2171, 3110, 4156, 4155; (3) POLS 1110 or ECON 2101; and (4) one gerontology course selected from SOWK, SOCY, PSYC, HIST, NURS, or GRNT.

Social Work Minor. A minor in social work requires 18 hours in social work courses as approved by a social work faculty adviser, in accordance with the student's particular educational needs. At least three semester hours will be directed independent study in an agency. The primary purpose of the minor is to complement a student's major. It does not prepare the student for social work practice.

SUGGESTED SCHEDULE: B.A., ANTHROPOLOGY

Freshman Year

ANTH 1101 3	ANTH 2141 4
GOAL I Foreign Language 4	GOAL I Foreign Language 4
GOAL I English 3	GOAL I English 3
GOAL II Mathematics 3	GOAL II Mathematics, Logic or Computer Science 3

Sophomore Year

ANTH 2151 3	ANTH Elective 3
GOAL III 3	GOAL IV 4
GOAL IV 4	GOAL V: (A) 3
GOAL VI 3	GOAL VI: (X) 3
Related Work/Minor 3	Elective 3

Junior Year

ANTH 3101 3	ANTH Electives 3
Electives 6	Related Work/Minor 3
GOAL V: (L) 3	Related Work/Minor 3
Related Work/Minor 3	GOAL I: (W) 3
	Elective 1

Senior Year

ANTH Electives 6	ANTH 3601 3
Related Work/Minor 3	Related Work/Minor 3
GOAL I: (W) 3	Electives 9
Elective 3	

SUGGESTED SCHEDULE: B.A., SOCIOLOGY

Freshman Year

SOCY 1101 3	SOCY Elective 3
GOAL I Foreign Language 4	GOAL I Foreign Language 4
GOAL I English 3	GOAL I English 3
GOAL II Mathematics 3	GOAL II Mathematics, Logic or Computer Science 3

Sophomore Year

SOCY Elective 3	SOCY 3153 3
GOAL III 3	GOAL IV 4
GOAL IV 4	GOAL V: (A) 3
GOAL VI 3	GOAL VI: (X) 3
Related Work/Minor 3	Related Work/Minor 3

Junior Year

SOCY 4155 3	SOCY 4156 4
GOAL I: (W) 3	SOCY Elective 3
GOAL IV 4	Related Work/Minor 3
GOAL V: (L) 3	Related Work/Minor 3
Related Work/Minor 3	GOAL I: (W) 3

Senior Year

SOCY Elective 4	SOCY Elective 3
SOCY Elective 3	Electives 11
Related Work/Minor 3	
Electives 6	

SUGGESTED SCHEDULE: B.S.W. DEGREE

Freshman Year

GOAL I English....3	SOCY 2171 3
GOAL I Foreign Language 4	GOAL I Foreign Language 4
GOAL II Mathematics 3	GOAL I English....3
GOAL III, VI(C) SOCY 1101 3	GOAL II Mathematics, Logic or Computer Science 3
	Elective 3

Sophomore Year

SOWK 2180 3	SOWK 2182 3
POLS 1101 or ECON 2101 3	GOAL IV 4
GOAL V (A) 3	GOAL V (L)....3
GOAL IV 4	GOAL VI (X)....3
GOAL I (W)....3	Elective (W) 3

Junior Year

SOWK 2183 3	SOWK 3182 3
SOWK 3181 3	SOWK 3183 3
GOAL IV 4	SOCY 4155 4
SOCY 3110 3	Gerontology Elective 3
GOAL I: (W) 3	Elective 3

Senior Year

SOWK 3280 3	SOWK Elective....3
SOWK 3482 6	SOWK 3484 6
SOWK 3683 1	SOWK 3685 1
SOCY 4156 4	Elective 3

ANTHROPOLOGY (ANTH) COURSE DESCRIPTIONS

Courses for Undergraduates

ANTH 1101. Introduction to Anthropology. (VX) (3) Biological and cultural evolution; archeology; language and culture; comparative study of human social institutions such as kinship, subsistence patterns, religion, politics; methods and theories. Prerequisite for all upper-level courses in anthropology. *(Fall, Spring, Summer) (Evenings)*

ANTH 2010. Topics in Ethnography. (3) Supervised investigation of ethnographic regions of the world. May be repeated for credit as the topics vary. Examples: Hunters and Gatherers, Plains Indians, People of Modern Greece, Peoples of The Mediterranean. *(Fall, Spring, Summer)*

ANTH 2050. Topics in Archeology. (3) Specialized topics in archeology. May be repeated for credit as topics vary. Examples: Historic Archeology, Old World Prehistory. *(Yearly)*

ANTH 2090. Topics in Anthropology. (1-3) Specialized topics in anthropology. May be repeated for credit as topics vary. *(Yearly)*

ANTH 2111. Peoples of Africa. (3) Ethnic and linguistic diversity in Sub-Saharan Africa; ecology and culture; patterns of continuity and change in kinship, marriage, economy, social control, stratification, and religion. *(Yearly)*

ANTH 2112. North American Indians. (3) Survey of the native peoples of America; culture at the time of European contact; major historical events and relationships; contemporary issues in Indian affairs. *(Yearly)*

ANTH 2113. Peasants and States. (3) Evolution of peasantry; social and cultural characteristics of past and present peasant societies; modernization, peasant revolts, and the position of peasants in the contemporary world economic system; analysis of selected peasant societies. *(On demand)*

ANTH 2114. Indians of the Southeastern United States. (X) (3) Study of American Indians of the southeastern United States with emphasis on tribes of the Carolinas. Areas of investigation include pre-contact cultures, Indian-European contact relationships, history, and contemporary Southeastern Indian issues. *(Alternate Years)*

ANTH 2121. Comparative Family Systems. (WX) (3) Cross-cultural survey of the origins and forms of the human family and interrelationships with other cultural institutions; role of the family in kinship, marriage, childrearing, sex roles, economics, political organization and religion. *(Yearly)*

ANTH 2122. Beliefs, Symbols and Rituals. (3) Structure and content of systems of belief and ritual; role in social life; analysis of religion, myth, magic, witchcraft, symbol systems, cult movements and religious change. *(Yearly)*

ANTH 2124. Language and Culture. (3) Examination of language as part of culture; relationship between language and other cultural features; historical linguistics, phonetics and phonemics, componential analysis, dialects, kinesics and body language, situational analysis of language. *(On demand)*

ANTH 2125. Urban Anthropology. (3) Cross-cultural analysis of urban life; rise of early cities; rural-urban differences; migration; ethnicity, urban poverty; effects of urban life on kinship systems; modernization. *(On demand)*

ANTH 2141. Principles of Physical Anthropology. (S) (4) Evolutionary theory; primates; primate and human evolution; population genetics; human variation, nutrition, disease; osteology. *(Fall, Spring)*

ANTH 2142. Primate Behavior. (3) Prerequisite: ANTH 1101. Primate evolution, taxonomy, ecology, social behavior, reproductive strategies; monkeys, apes and human beings; communication, aggression, mother-infant bonding, sociobiology; fieldwork, conservation. *(Yearly)*

ANTH 2145. Evolution of Human Sexual Behavior. (3) Sexual selection; reproductive strategies; parental investment; physiology; human evolution; gender differences; sexual practices cross-culturally; sociobiology. *(On demand)*

ANTH 2151. General Archeology. (3) Archeological method and theory; trends in human cultural development; important archeological sites and cultures from Old and New worlds. *(Fall)*

ANTH 2152. New World Archeology. (3) Pre-history of North America; Paleoindians, Eastern United States, Southwest, Mexico; archeological methods and theory. *(Yearly)*

ANTH 3101. Foundations of Anthropological Theory. (3) Prerequisites: ANTH 1101 and junior standing. History of anthropological theory; the anthropological perspective in the social sciences; examinations of current theoretical and methodological issues in anthropology. *(Fall)*

ANTH 3111. Culture Change and Applied Anthropology. (3) Prerequisite: ANTH 1101 or consent of instructor. Cultural dynamics; agents and conditions promoting growth; application of anthropological theories and methods to domestic and foreign programs of sociocultural change. *(On demand)*

ANTH 3112. Anthropology and Art. (XA) (3) Prerequisite: ANTH 1101 or consent of instructor. Cross-cultural investigation of various forms of artistic expression throughout the world and how they function in terms of values and cultural context. The course includes a variety of hands-on experiences in different art forms. *(Alternate years)*

ANTH 3122. Culture, Health and Disease. (3) Prerequisite: ANTH 1101 or consent of the Department. Relationship between cultural beliefs and practices and patterns of health and illness in human populations; role of disease in human evolution, ecology and epidemiology, nutrition, cultural systems of healing, roles of patient and healer, culture and emotional states, role of religion, and magic in healing. *(On demand)*

ANTH 3140. Forensic Anthropology. (3) Prerequisite: ANTH 1101. Relates classical techniques of comparative human anatomy and physical anthropology to the modern problems in the identification of human remains. Surveys anthropological methods used to recover, recognize, interpret and identify human remains in paleontology, archeology, criminal and mass disaster investigations; includes field exercise in crime scene recovery coordinated with relevant county and city agencies. *(Yearly)*

ANTH 3152. Early Civilizations. (3) Prerequisite: ANTH 1101 or 2151 or consent of instructor. Great civilizations of Old and New Worlds; Mesopotamia, India, Greece, Africa, Egypt, China, Mexico, Peru; theories of cultural evolution; beginnings of complex societies; archeological theory and method, environment and ecology of first civilizations. *(Alternate years)*

ANTH 3153. Archeological Analysis. (3) Prerequisite: ANTH 2151 or consent of the instructor. Research and analysis of archeological materials including lithics, ceramics, pollen, bones, metals, etc.; discussion of analytical equipment used in archeology; examination of modern archeological method and theory at an advanced undergraduate level. An individual research project required of each student. *(Alternate years)*

ANTH 3154. European Prehistory. (3) Prerequisite: ANTH 1101 or 2151 or consent of the instructor. Prehistory of Europe; Paleolithic, Neolithic, Bronze Age, Iron Age; archeological methods and theory; ecology and social systems of early European cultures. *(Alternate Years)*

ANTH 3453. Field Projects in Archeology. (1-4) Prerequisite: ANTH 1101 or ANTH 2151 or consent of instructor. (Credit hours will be established by instructor prior to the field project.) Practical experience in archeological techniques. Students will participate in field research on an historic or prehistoric archeological site. Research may include field reconnaissance, excavation, mapping, systematic description and analysis of cultural material, and/or other techniques appropriate to the site and research problem. May be repeated for credit as projects vary. Up to eight hours of credit may be applied toward the anthropology major. *(Presession, Summer)*

ANTH 3480. Internship in Anthropology. (3-6) Prerequisite: consent of the Department. Research and/or in-service training experience in cooperating community organizations. Content of internship based upon a contractual agreement among the student, Department and community organization. Amount of credit determined by the nature and extent of the internship assignment. May be repeated for credit up to a maximum of six semester hours. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

ANTH 3601. Seminar in General Anthropology. (W) (3) Prerequisite: ANTH 3101 and senior standing. Synthesis and integration of subfields of anthropology with emphasis on individual research projects stressing orientation to the discipline, its uses and future. *(Spring)*

ANTH 3895. Directed Individual Study. (1-4) Prerequisite: ANTH 1101 and consent of the Department. Supervised investigation of problems and areas in anthropology. May be repeated for credit. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduates
Additional work required of students receiving graduate credit.

ANTH 4090. Topics in Anthropology. (1-3) (1-3G) Prerequisite: ANTH 1101 or consent of instructor. Examination of specialized topics in anthropology. May be repeated for credit as topics vary. Examples: Human Ecological Systems, Women and Culture, Primitive Arts and Crafts.

ANTH 4110. American Ethnic Cultures. (X) (3) (3G) Prerequisite: ANTH 1101 or consent of instructor. An anthropological and ethnohistorical survey of ethnicity, persistence and cultures of the ethnic groups of America. Topics include theories of ethnicity, immigration, ethnic identity, reasons for immigration, acculturation experiences, and cultural characteristics of established and more recent ethnic groups. *(Alternate years)*

ANTH 4120. Intercultural Communications. (3) (3G) Prerequisite: ANTH 1101 or consent of instructor. Learning to cope with cultural differences; contrasting value systems; cross-cultural and communication styles; nonverbal communication; cultural relativity; ethnocentricism; culture and perception; cultural shock. *(On demand)*

ANTH 4121. Culture and Personality. (3) (3G) Prerequisite: ANTH 1101 or PSYC 1101 or consent of instructor. Anthropological contributions to theories of personality formation; data on tribal and national characteristics, patterns of childrearing, culturally derived aspects of human behavior, deviancy and personal integration with the cultural milieu. *(Alternate years)*

ANTH 4140. Primatological Field Observation. (4) (4G) Prerequisite: ANTH 1101, 2141 or consent of instructor. Practical experience in techniques of observation of animal behavior with a focus on the primates. Training in methods of hypothesis formulation, observation, record-keeping and data analysis. Research on captive and free ranging animals. Analysis of the behavioral characteristics of prosimians, monkeys and apes. *(Alternate years)*

MUSEUM STUDIES (MSTS) COURSE DESCRIPTIONS

MSTS 2101. Introduction to Museum Studies. (3) Survey of the museum profession; types, philosophies, functions and goals of museums; and responsibilities to the profession and to educating the public and scholarly communities. *(Fall)*

MSTS 3090. Topics in Museum Studies. (3) Prerequisite: MSTS 2101, 3101, 3102, or consent of instructor. Examination of specialized topics in museum studies. May be repeated for credit as topics vary. *(On demand)*

MSTS 3101. Curation and Collections. (3) Prerequisite: MSTS 2101. Types of collections, storage, records, policies, conservation, liabilities and legal issues; uses of collections. *(On demand)*

MSTS 3102. Research and Documentation. (3) Prerequisite: MSTS 2101. Research in the museum; interdisciplinary research methodologies, documentation of collections, exhibit planning and preparation, publications documenting collections. Students will be required to develop a research project in conjunction with some aspect of museum work. *(On demand)*

MSTS 3201. Museum Education. (3) Prerequisite: MSTS 2101. Museums as educational institutions; interpretation of collections for exhibitions and how to develop educational programs for museums. *(On demand)*

MSTS 3202. Museum Administration. (3) Prerequisite: MSTS 2101. Survey of museum organization and administration; ethics and policies, governing authorities, relationship to public, ethics, legal and financial matters, including budget planning and grant applications. *(On demand)*

MSTS 3480. Internship in Museum Studies. (3-6) Prerequisite: MSTS 2101, at least six hours of Museum Studies core courses beyond 2101 and consent of Program Coordinator. Research and/or in-service training in area museums. Content of each internship will be based upon a contractual agreement between the student, Program Coordinator and museum. Amount of credit to be determined by the nature and extent of the internship assignment. May be repeated for credit up to a maximum of six semester hours. *(Fall, Spring, Summer)*

MSTS 3601. Senior Internship or Project. (3-6) Prerequisite: senior standing, MSTS 2101 and Museum Studies core courses. Senior project or internship in any of the subareas of the museum field relevant to the major discipline and specific interests of the student or a synthesis of prior work. *(Fall, Spring, Summer)*

MSTS 3895. Directed Individual Studies. (1-4) Prerequisite: MSTS 2101 and consent of Program Coordinator. Supervised investigation of problems and areas in the museum profession of special interest to the student. May be repeated for credit. *(Fall, Spring, Summer)*

SOCIAL WORK (SOWK) COURSE DESCRIPTIONS

SOWK 2180. The Field of Social Work. (3) Development and philosophy of social work as a profession; personal and societal needs; methods and organizational arrangements; roles and tasks of social workers. *(Fall, Spring)*

SOWK 2182. Human Behavior and the Social Environment I. (3) Prerequisite: SOWK 2180. Transitional and developmental patterns of the individual. *(On demand)*

SOWK 2183. Human Behavior and the Social Environment II. (3) Prerequisite: SOWK 2182 or consent of instructor. Interaction between the individual, family, community and larger social system; individual problem solving; delivery of social services; impact of racism, sexism, poverty, ethnicity, and social class. *(On demand)*

SOWK 3090. Topics in Social Work. (1-3) Specialized topics in social work. May be repeated for credit as topics vary. (A listing and brief description of specific courses offered each term is available from the departmental office.) *(On demand)*

SOWK 3181. Social Work Methods I. (3) Prerequisite: SOWK 2180 or consent of the instructor. Dynamics of the helping process; basic knowledge, value, skills and methods underlying the profession of social work. *(Fall, Spring)*

SOWK 3182. Social Work Methods II. (3) Prerequisite: SOWK 3181. Concepts, theories, principles and methods of intervention used in social work practice. *(Spring)*

SOWK 3183. Foundations of Social Welfare. (W) (3) Prerequisite: SOWK 2180. Foundations of social welfare; issues, processes, values and conflicts which influence social welfare programming. *(Fall)*

SOWK 3280. Social Welfare Policy. (3) Prerequisite: SOWK 2180, 3183. Nature and development of social welfare policy; implications of policy for program design and service delivery; role of the social worker in developing and implementing social welfare policies. *(Spring)*

SOWK 3482. Social Work Field Placement I. (6) Prerequisite: SOWK 3182 and consent of the Department. Corequisite: SOWK 3683. Directed field experience under professional supervision in selected community agencies. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

SOWK 3484. Social Work Field Placement II. (6) Prerequisite: SOWK 3482. Corequisite: SOWK 3685. A continuation of SOWK 3482. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

SOWK 3683. Social Work Field Placement Seminar I. (1) Corequisite: SOWK 3482. Analysis and discussion of student field experience. *(Fall, Spring)*

SOWK 3685. Social Work Field Placement Seminar II. (1) Corequisite: SOWK 3484. A continuation of SOWK 3683. *(Fall, Spring)*

SOWK 3895. Directed Individual Study. (1-4) Prerequisite: consent of the Department. Supervised investigation of a special problem. May be repeated for credit. *(Fall, Spring, Summer)*

SOWK 4100. Ethnicity and Aging. (3) (3G) Prerequisite: consent of the instructor. Examines the changing characteristics, goals and needs of older African-Americans, Asian-Americans, Native Americans and Hispanics. Provides a diversity of perspectives from which to view the relationship of ethnicity to aging including the impact of the family, work, education, economy, illness behavior and health care. *(On demand)*

SOWK 4101. Social Work Practice With the Elderly. (3) (3G) Prerequisite: GRNT 2100 and/or consent of the department. Continuum of care for the elderly. Psychosocial assessment, treatment/intervention planning and implementation. Approached from eclectic clinical social work perspective with particular emphasis on psychosocial systems, family and group treatment modalities. *(On demand)*

SOCIOLOGY (SOCY) COURSE DESCRIPTIONS

Courses for Undergraduates

SOCY 1101. Introduction to Sociology. (VC) (3) The sociological perspective and process; fundamental concepts, principles and procedures. *(Fall, Spring, Summer) (Evenings)*

SOCY 2090. Topics in Sociology. (1-3) Prerequisite: SOCY 1101. Examination of specialized topics. May be repeated for credit as topics vary. *(On demand)*

SOCY 2112. Popular Culture. (VC) (3) Analysis of popular forms of everyday life in America: fashions, fads, entertainment trends, advertising, television programming, music, myths, stereotypes and icons of mass-mediated culture. *(Fall, Spring)*

SOCY 2132. Marriage and the Family. (VC) (3) Prerequisite: SOCY 1101. Cross-cultural examination of family; socialization and sex roles; love, dating, and mate selection; communication; sexuality; power and decision making; parenthood; childlessness; conflict and violence; divorce, remarriage and stepfamilies; alternate lifestyles; and future family. *(Fall, Spring, Summer) (Evenings)*

SOCY 2171. Social Problems. (3) Prerequisite: SOCY 1101. Contemporary social problems and consequences for American society. *(Fall, Spring, Summer) (Evenings)*

SOCY 3110. American Minority Groups. (3) Prerequisite: SOCY 1101. Relations between dominant and minority groups; the establishment, maintenance and decline of dominance involving racial, ethnic and religious minorities. *(Yearly)*

SOCY 3125. Urban Sociology. (3) Prerequisite: SOCY 1101 or consent of instructor. Cross-cultural analysis of urban development, organization, ecology, demographic composition, social psychological attributes and social problems. *(Yearly)*

SOCY 3143. Social Movements. (3) Prerequisite: SOCY 1101. Analysis of collective behavior, ideology, development and organizations of movements seeking or resisting change. *(Yearly)*

SOCY 3153. Evolution of Sociological Theory. (3) Prerequisite: SOCY 1101. Origins and evolution of fundamental sociological concepts and theories. *(Fall, Spring)*

SOCY 3162. Social Control. (3) Prerequisite: SOCY 1101. Relationship of social structure and social norms to conforming and deviant behavior; economic and political power, public opinion, law, ideology, political propoganda, organizational climate, and religion as types of social control. *(On demand)*

SOCY 3173. Criminology. (3) Prerequisite: SOCY 1101. Nature and historical development of crime and political-economic organization of crime, criminal law, theories of crime causation. *(Yearly)*

SOCY 3480. Internship in Sociology. (3-6) Prerequisite: consent of the Department. Research and/or in-service training for selected students in cooperating community organizations. Specified content based upon a contract between student, department and community organization. May be repeated for credit up to six semester hours. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

SOCY 4090. Topics in Sociology. (1-3) (1-3G) Prerequisite: SOCY 1101. Examination of specialized sociological topics. May be repeated for credit. (A listing and brief description of specific courses offered each term is available from the departmental office.) Examples: corporate crime, collective behavior, divorce, family violence, mental health. *(On demand)*

SOCY 4110. Sociology of Aging. (3) (3G) Changing characteristics, aspirations and needs of older adults and their impact upon such institutions as the family, work, the economy, politics, education, and health care; emphasis on sociological theories of aging, contemporary research, and the analysis of specific aging policies and programs. Graduate students will be required to do additional reading and/or research and, if time permits, to present their materials to the other class members. *(Yearly)*

SOCY 4111. Social Inequality. (3) (3G) Prerequisite: SOCY 1101. Distribution of power, privilege and prestige; correlates and consequences of inequality; national and international comparisons. *(Fall, Spring)*

SOCY 4112. Sociology of Work. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. The emergence of industrialization; its technology and impact on work, community and family; problems and contemporary trends in selected industrial societies. Additional work will be required of all graduate students. *(Yearly)*

SOCY 4115. Sociology of Corporations. (3) (3G) Prerequisite: SOCY 1101. Structure and dynamics of complex organizations; bureaucracy; mechanisms of change. *(Yearly)*

SOCY 4122. Population and Society. (3) (3G) Prerequisite: SOCY 1101. International trends in population change, composition, distribution, fertility, mortality, migration; basic demographic measures and data sources for community analysis. *(Yearly)*

SOCY 4124. Sociology of the Community. (3) (3G) Prerequisite: SOCY 1101. Concepts and methods of community analysis of planned and unplanned community change. *(Summer)*

SOCY 4130. Sociology of Health and Illness. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Impact of social factors on health and illness; health care occupations; organization and financing of health care; international comparisons; prospects for the future. Graduate students required to do additional readings and/or research. *(On demand)*

SOCY 4132. Sociology of Sport. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Dynamics and emergence of sport; reciprocal influence between sport and society; values, norms, and roles in sports. Additional work required by graduate students. *(Yearly)*

SOCY 4135. Sociology of Education. (3) (3G) Prerequisite: SOCY 1101 or consent of the instructor. Educational institution; the school class as a social system; the school as a social environment and a complex organization. *(Yearly)*

SOCY 4154. Theory Construction. (3) (3G) Prerequisite: SOCY 3153 or consent of instructor. Elements and process of theory construction; contemporary social theories. *(On demand)*

SOCY 4155. Sociological Research Methods. (4) (4G) Prerequisite: SOCY 3153 or consent of instructor. Formulation of research problems; research designs; social measurement; sampling; collection, analysis and interpretation of data. *(Fall, Spring)*

SOCY 4156. Quantitative Analysis. (4) Prerequisites: SOCY 4155 or consent of the instructor. Concepts and procedures of sociological analysis; data processing; measurement theory; quantitative models of analysis. Three hours of lecture-discussion and two hours of laboratory each week. *(Fall, Spring)*

SOCY 4161. Socialization and Society. (3) (3G) Prerequisite: SOCY 1101. Analysis and process of socialization, social interaction, sociocultural dimension of personality. *(Yearly)*

SOCY 4163. Sociology of Sex Roles. (3) (3G) Prerequisite: SOCY 1101 or consent of the instructor. Changing sex role behavior, socialization into sex roles, institutional sexism; alternative sex role models. *(Fall, Spring, Summer) (Evenings)*

SOCY 4172. Sociology of Deviant Behavior. (3) (3G) Prerequisite: SOCY 1101. An examination of the social processes producing unusual, bizarre and condemned behavior. *(Fall, Spring) (Evenings)*

SOCY 4173. Juvenile Delinquency. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Youth crime and deviance; theories of causation; systems of control. *(Yearly)*

SOCY 4261. Human Sexuality. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Human sexuality research; teenage pregnancy; birth control; sex education; sexual fantasy; pornography; homosexuality and bisexuality; sexual communication; heterosexual alternatives. *(Fall, Spring, Summer)*

SOCY 4263. Sociology of Small Groups. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Systematic analysis and application of theoretical and empirical research pertaining to small groups. *(On demand)*

SOCY 4620. Seminar in the Sociology of Housing. (3) (3G) Prerequisite: SOCY 1101 or consent of instructor. Housing as a social and physical variable in relation to social problems; social policy, community development, social stratification, life cycle, racial-ethnic relations, individuals and neighborhoods, tenant-landlord reactions and future alternatives. *(Alternate years)*

SOCY 4631. Seminar in Family Violence. (3) (3G) Prerequisite: upper-division family-related course or consent of the instructor. Family violence in the context of a changing society and family system. Principal foci: child abuse and wifebeating; related concerns include violence between siblings, violence by children toward the parental generation, and violence by wives against husbands. Investigation of these topics in terms of sociocultural influences and the internal dynamics of families. Additional work is required by graduate students. *(Yearly) (Evenings)*

SOCY 4632. Changing American Family. (3) (3G) Prerequisites: SOCY 1101 and 2132, or consent of instructor. Family theories; family system in relation to other social systems; integration of marital, parental and occupational roles in context of changing socioeconomic influences; traditional versus contemporary family roles; breakdown in stable family functioning. *(Yearly)*

SOCY 4656. Seminar in Sociological Research. (W) (3) (3G) Prerequisite: completion of all other required core courses. Development, analysis, and presentation of independent research project. Review of other research projects. *(Spring)*

SOCY 4895. Directed Individual Study. (1-4) (1-4G) Prerequisite: consent of the instructor. Supervised investigation of a special problem. May be repeated for credit. *(Fall, Spring, Summer)*

Courses for Graduate Students and Advanced Undergraduates

The following courses are designed primarily for graduate students, but may be taken by advanced undergraduates for undergraduate credit. See pages 406-408 for complete course descriptions.

SOCY 5110. Intergroup Relations. (3) (3G)

SOCY 5625. Seminar in Urban Sociology. (3) (3G)

Department of Visual Arts

Chairperson: Associate Professor Byrum; *Professors:* Anderson, MacKillop, Strawn; *Associate Professors:* Bringle, Kampen, Tite; *Assistant Professors:* Hudson, Kaufman, Kroff, Tweedy; *Lecturers:* Rauch, Willette

The Department of Visual Arts offers a diverse and comprehensive program leading to a Bachelor of Creative Arts degree, as well as teacher certification. The curriculum emphasizes painting, sculpture, photography, graphic design, illustration, fiber design, printmaking, ceramics, drawing, art history, and art education.

A concentration in studio art is available for students who are preparing for careers in fine arts, graphic design/illustration, and art education. Members of the studio faculty are professional artists, active in one or more fields of specialization. A diversity of viewpoints and educational training among faculty members encourages students to investigate and appreciate many different forms of art expression.

The study of the history of art offers a visual key to understanding the evolution of civilization and the development of human creativity. As a discipline, art history encourages appreciation of individual works of art and instills a vivid awareness of the social and historical context in which these works were produced.

The Visual Arts program addresses the needs of students working to become exhibiting artists, art teachers or scholars generally educated in the arts. The program is structured upon the following premises:

1. an undergraduate program in the arts develops within its students the ability to identify artistic problems and to solve them;

2. one accumulates a wide range of data and moves toward varied experiences in response to a specific need or problem; and

3. a university program focused through the arts should lead its students to an awareness of the interrelatedness of all forms of knowledge and of the shared elements of the creative process, and should provide the opportunity to participate regularly and meaningfully in that creative process.

BACHELOR OF CREATIVE ARTS (BCA)

General Requirements for Visual Arts Majors. All students majoring in art are required to enroll in courses that satisfy the six Goals of UNCC Education. Students enrolled prior to the establishment

of this requirement, and qualified transfer students enrolling before summer session 1988, must complete the previous 36 hour requirement. This previous requirement includes: English 1101 and 1102; six credits of either math, foreign language, natural science or social science; 12 credits of non-art courses which relate thematically to the four individual project courses; and 12 credits of courses related to the student's educational and vocational goals.

Requirements for the Major. A major in Visual Arts leading to the BCA degree consists of 84 hours of art including 18 hours of the Visual Arts Core, two art history electives, Introduction to Individual Projects, Junior Individual Projects I & II, Senior Individual Projects I & II, Senior Seminar, Senior Exhibit, and 30 credit hours of art studio electives of which nine credit hours should be at the intermediate level.

Visual Arts Core. The Visual Arts Core develops the attitudes, conceptual awareness, creative methods, and technical skills basic to the visual arts through investigation of the perceptual, conceptual, and physical elements employed in the arts. In the first four semesters, students take Two-Dimensional Design, Three-Dimensional Design, Drawing I, Drawing II, Figure Study or Concepts in Form and Structure, and Introduction to Art History. Students must complete this 18 credit hour core program and Introduction to Individual Projects to be eligible for junior-level course work.

Individual Projects. Central to the BCA degree program in Visual Arts are the Individual Projects. With close faculty supervision, students devise projects to meet their own artistic and educational objectives. The purpose of Individual Projects is to assist students to be independent, creative artists within a university context. A typical project requires students to create their own original, finished art. In addition to pursuing their own artistic development, students are encouraged to explore relationships between the arts and other fields of knowledge.

The project course block begins in the junior year, after the Visual Arts Core and Introduction to Individual Project is completed, and continues through the senior year. Students prepare project proposals with faculty guidance, work according to a schedule they set themselves during the semester, and submit work for evaluation at the end. Individual Projects provide a realistic setting for students to explore personal directions in the arts and to cultivate a variety of independent problem-solving skills. The project course block consists of ARTS 3601, 3602, 3691, and 3692.

Transfer Student Review Procedures to Waive ARTS 3602. Transfer students who have completed a minimum of 60 credit hours which includes equivalent of the 18 credit hour Visual Arts Core and six credit hours of introductory studio media courses prior to entering UNCC may request from the Chairperson a faculty review for the purpose of waiving ARTS 3602. The student must first successfully complete Introduction to Individual Projects and ARTS 3601 Junior Individual Project to be eligible to request the review to waive ARTS 3602.

Advisory System. Visual Arts students are assigned an academic adviser from the Department. In addition to meetings required for pre-registration, the student may ask the adviser for any art program information.

Students may also seek advice from their individual project instructor. Each student meets weekly with the project instructor for the purpose of reviewing and discussing individual project course work.

Teacher Certification. The Department offers courses for students seeking art education certification and teacher certification. Students planning to specialize in art education should apply through the Coordinator for Art Education during the first semester of the sophomore year. A later decision to seek Art education certification may result in delayed graduation from the 146 credit hour program. Students majoring in education in the College of Education and Allied Professions should consult their advisers for a list of recommended visual arts courses for teaching certification.

HONORS PROGRAM IN VISUAL ARTS

An honors program in Visual Arts is offered primarily for students majoring in Visual Arts and is based on individual honors projects.

Admission. Students must have completed a number of course prerequisites and at least 60 semester hours of course work and have an overall GPA of 3.0 and a 3.5 in Visual Arts course work. Additionally, students must be recommended by the Department Honors Committee to participate in the program.

Courses. The courses offered are "Individual Project, Honors" at both the junior and senior levels, and Senior Seminar.

Certification Requirements. A student must complete 21 hours of honors individual projects, with at least nine hours of work at the senior individual level and achieve an overall GPA of 3.5 in all honors course work completed in the Department.

Note: The Department of Visual Arts is in the process of ammending its curriculum. Consult with the department to obtain current requirements.

SUGGESTED SCHEDULE: BCA DEGREE

Freshman Year

ARTS 1201 Two-Dimensional Design 3	ARTS 1202 Three-Dimensional Design 3
ARTS 1203 Drawing I 3	ARTS 1204 Drawing II.....3
ARTS 1102 Introduction to Art History...3	ARTS xxxx Art History Elective.....3
GOAL I: ENGL 1101 3	GOAL I: ENGL 1102 3
GOAL I: Foreign Language Proficiency...4	GOAL I: Foreign Language Proficiency...4

Sophomore Year

ARTS 1205 Figure Study 3	ARTS xxxx Intro. to Indiv. Projects 3
ARTS xxxx Art Studio Elective 3	ARTS xxxx Art History Elective.....3
ARTS xxxx Art Studio Elective 3	ARTS xxxx Art Studio Elective 3
GOAL II: Mathematics 3	GOAL II 3
GOAL IV 4	GOAL IV 4

Junior Year

ARTS 3601 Junior Indiv. Proj. I 3	ARTS 3602 Junior Indiv. Proj. II 3
ARTS xxxx Art Studio Elective 3	ARTS xxxx Art Studio Elective 3
ARTS xxxx Art Studio Elective 3	ARTS xxxx Art Studio Elective 3
GOAL V 3	GOAL I: (W) 3
GOAL III 3	GOAL VI: (X) 3

Senior Year

ARTS 3691 Senior Indiv. Proj. I 6	ARTS 3692 Senior Indiv. Proj. II 6
ARTS xxxx Art Studio Elective 3	ARTS xxxx Art Studio Elective 3
ARTS xxxx Art Studio Elective 3	ARTS xxxx Senior Seminar 3
GOAL VI 3	ARTS xxxx Senior Exhibit (recommended) 1

Note: *Several courses within the Visual Arts major may meet the requirements of the general education program. Consult the Department for specific information regarding the general education program.*

SUGGESTED SCHEDULE: BCA DEGREE, TEACHER CERTIFICATION K-12

Freshman Year

ARTS 1201 Two-Dimensional Design 3
ARTS 1203 Drawing I 3
ARTS 1102 Introduction to Art History ...3
GOAL I: ENGL 1101 3
GOAL I: Foreign Language Proficiency ...4

ARTS 1202 Three-Dimensional Design 3
ARTS 1204 Drawing II.....3
ARTS xxxx Art History Elective.....3
GOAL I: ENGL 1102 3
GOAL I: Foreign Language Proficiency ...4

Sophomore Year

ARTS 1205 Figure Study 3
ARTS 2215 Ceramics/Handbuilding 3
ARTS 2230 Introduction to Painting.....3
GOAL II: Mathematics 3
GOAL IV 4

ARTS xxxx Intro. to Indiv. Projects 3
ARTS xxxx Art History Elective.....3
ARTS 2220 Introduction to Fiber.....3
GOAL II 3
GOAL IV 4

Junior Year

ARTS 3601 Junior Indiv. Proj. I 3
ARTS 2170 Vis. Arts Ed./Early Yrs. 3
ARTS 3170 Art Ed. Methods I.....3
ARTS 2235 Photography I 3
ARTS 2243 Printmaking: Woodcut 3
GOAL V 3

ARTS 3602 Junior Indiv. Proj. II 3
ARTS 3171 Art Ed. Methods II 3
ARTS 2245 Introduction to Sculpture 3
ARTS xxxx Intermed. Studio Emphasis ...3
Performing Arts Elective 3
GOAL I: (W) 3

Senior Year

ARTS 3691 Senior Indiv. Proj. I 6
ARTS xxxx Intermed. Studio Emphasis ...3
ARTS xxxx Senior Seminar 3
EDUC 2100 Intro. to Education.....3
GOAL VI: (X) 3

ARTS xxxx Senior Exhibit (recommended).1
ARTS xxxx Intermed. Studio Emphasis ...3
EDUC 2150 Hum. Dev. Art/Life Span....3
READ 5250 (W) Read. in the Cont. Area .3
GOAL III 3
GOAL VI 3

NINTH SEMESTER

ARTS 3479 Student Teaching in
Visual Arts 12

Note: *Several courses within the Visual Arts major may meet the requirements of the general education program. Consult the Department for specific information regarding the general education program.*

VISUAL ARTS (ARTS) COURSE DESCRIPTIONS

ARTS 1101. Art Appreciation. (A) (3) Introduction to the appreciation of art through slide lectures concerning a brief chronological history of art, the elements of design, and general concepts of art. For non-majors and majors without prior art training. *(Fall, Spring, Summer)*

ARTS 1102. Introduction to Art History. (A) (3) History of art from its origins in paleolithic cave painting to the present day. Identification of major art works and style movements. Emphasis on the history of the visual arts and related cultural events. *(Fall, Spring, Summer)*

ARTS 1104. Issues in the Arts. (3) An examination, discussion and study of major issues in the arts with special emphasis on issues that face the artist in our contemporary society, with slides and topical discussions. *(On demand)*

ARTS 1105. Comparative Art: Western/Non-Western. (3) Comparison of art theory and aesthetics in Western and non-Western culture, with slides and topical discussions. *(Spring)*

ARTS 1106. Comparative Art: European Art Through the 19th Century. (3) Comparison of art theory and aesthetics in European Art through the 19th century, with slides and topical discussions. *(Spring)*

ARTS 1107. Comparative Art: 20th Century Art, American and European. (3) Comparison of art theory and aesthetics in 20th-century art, American and European, with slides and topical discussions. *(Fall)*

ARTS 1201. Two-Dimensional Design. (3) Emphasis on the two-dimensional surface and its structural possibilities (i.e., graphics, photography, painting); elements of plastic expression related to increased complexity of space and form. Priority for majors only. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 1202. Three-Dimensional Design. (3) Exploration of materials, tools, and methodology as they relate to form and space in three dimension. Priority for majors. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 1203. Drawing I. (3) Introduction to drawing involving skills and theory including perspective, proportion, and rendering in a variety of media and techniques. Priority for majors. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring, Summer)*

ARTS 1204. Drawing II. (3) Drawing media including graphite, ink, brush, light sensitive, electrical-mechanical and embossing techniques. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 1205. Figure Study. (3) A course utilizing the figure as it relates to form, contour and movement; an anatomical study emphasizing the relationships of skeletal and muscle organization and other referents in the development of graphic skills and vocabulary. Three lecture hours, three lab hours. Majors may repeat for a total of six hours credit. Lab fee. *(Fall, Spring)*

ARTS 1206. Concepts in Form and Structure. (3) A combination theory and methods course designed to explore natural forms as they relate to the third dimension; developed from analysis of objects conditioned by perceptual attitudes. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 2170. Visual Arts Education: Early and Middle Years. (3) Emphasis on the creative growth potential of children at the elementary level; perceptual development and learning objectives; past and current philosophies, psychology and methods in art education; individual studio problems involving art elements, principles and media. Lab fee. *(Fall, Spring, Summer)*

ARTS 2171. Foundations of Art Education. (3) The development of objectives for art education based on personal and historical references, philosophy and psychology. A critical examination of traditional and contemporary bases. *(Fall)*

ARTS 2215. Ceramics/Handbuilding. (3) A skills course introducing methods of forming clay, glaze composition and low-temperature firing procedures. Six contact hours. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2216. Ceramics/Wheel. (3) Introduction to wheel forming techniques and concepts involving skill development, glaze formation and basic high-fire techniques. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2220. Introduction to Fiber. (3) An introduction to the use of non-loom weaving techniques. Emphasis will be placed on the structure and the further application of the techniques. Course may include frame weaving, basketry, cardweaving, spinning and felting. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2221. Batik. (3) Understanding the historical rudiments of designing on fabrics, using reverse or resist techniques; artistic and sociological implications of the revival of this ancient art/craft; exploration of contemporary design and techniques as a medium of visual expression. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 2225. Metalsmithing/Jewelry I. (3) An introduction to basic design problems in metalsmithing, with an emphasis on the development of mechanical skills, piercing, cold joining, soldering, forming and finishing processes of non-ferrous metals. Includes a brief survey of contemporary trends in metalsmithing. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 2226. Casting/Jewelry. (3) Casting and construction for jewelry. Course includes a survey of contemporary jewelry design. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 2230. Introduction to Painting. (3) Basic theory and technique of easel painting in oils from preparation of the painting support through final framing. Basic experience in drawing helpful. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2231. Watercolor/Mixed Media. (3) Fundamentals of watercolor and related mixed media with emphasis on developing aesthetic understandings, skills in handling painting media and exploration of varied approaches to pictorial solutions. Individual experimentation and expression. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring)*

ARTS 2235. Photography I. (3) Fundamental principles, processes and aesthetics of photography. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2240. Printmaking: Lithography. (3) A survey of technical hand printing approaches to stone and plate lithography. May be repeated for credit.Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

ARTS 2241. Printmaking: Etching. (3) A survey of etching, equating, engraving, drypoint and sculptural techniques in intaglio print medium. Printing in mono-tone and multi-color approaches are required. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

ARTS 2242. Printmaking: Silk Screen. (3) A survey of tusche and glue, cut film, glue negative, photographic image and mixed techniques in screen printing. Problems of personal imagery stressed. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

ARTS 2243. Printmaking: Woodcut. (3) A survey of approaches to relief media: wood, metal, plastic, linoleum and plaster. Image development is stressed along with the unique qualities of this medium. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

ARTS 2245. Introduction to Sculpture. (3) A beginning studio course designed to introduce three-dimensional forms and concepts with an emphasis on methods and materials. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 2680. Issues in Modern Painting. (3) Seminar with assigned reading, slides, exhibition visits. Two major papers or studio projects. *(On demand)*

ARTS 3001. Topics in Art. (1-3) Special topics in arts. May be repeated for credit with change in topic. *(On demand)*

ARTS 3170. Art Education Methods I (K-12). (3) Prerequisite: ARTS 2171. Analysis of learning theories as related to growth and development in visual arts; organization of tools, media and materials; curriculum design in planning art units and lesson plans; evaluation and motivation techniques. *(Fall)*

ARTS 3171. Art Education Methods II (K-12). (3) Prerequisite: ARTS 2171. The school structure—local, state and national economic and political considerations; the relationship of the arts and artists to contemporary society; issues and research in art education; classroom management; school exhibition. Three contact hours plus school visits. *(Spring)*

ARTS 3172. Aesthetic Education in the Schools. (3) Prerequisite: consent of instructor. Focus will be upon assisting classroom and art teachers in developing techniques for dealing with aesthetic experiences and the creative process as tools for learning. Emphasis will be placed upon productive analysis of the dimensions of natural and created art forms (visual arts, dance/movement, music and drama), consideration of their qualities and making value judgments. *CEMREL Aesthetic Education* materials dealing with aesthetics of the physical world, arts elements, creative process, artists, environment and the culture will be utilized. May be repeated for credit. *(Spring)*

ARTS 3175. Intermediate Ceramics. (3) Prerequisite: ARTS 2215 or 2216 or consent of the instructor. Emphasis on exploration and development of individual concepts and relevant technical concerns beyond ARTS 2215 and 2216. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring)*

ARTS 3220. Intermediate Fibers. (3) Prerequisite: ARTS 2220 or consent of instructor. Introduction to the loom, procedures for warping, basic technique including drafting, patterns and color problems; emphasis on technique and structure. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

ARTS 3221. Rug Weaving. (3) Prerequisite: ARTS 3220. A technical study including warp-faced and weft-faced rugs, pile, and flat woven surfaces. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

ARTS 3222. Tapestry. (3) Prerequisite: ARTS 3220 or consent of instructor. Tapestry techniques concentrating on color and design. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

ARTS 3225. Metalsmithing/Jewelry II. (3) Prerequisite: ARTS 2225. Fabrication of two and three dimensional forms; introduction to additional techniques in raising, forming, forging and surface embellishment. Emphasis on the exploration of design concepts. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 3230. Intermediate Painting. (3) Prerequisite: ARTS 2230 or consent of instructor. Problems of composition, color, space and surface as applied to both abstract and figurative modes of expression. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 3235. Photography II. (3) Prerequisite: ARTS 2235 or consent of instructor. Intermediate techniques in photography; exposure, development of printing. Emphasis is given to relationship of picture aesthetic and printing techniques. May be repeated for credit with permission of instructor. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

ARTS 3236. Alternative Photographic Media. (3) Alternative silver and non-silver photographic media and aesthetics. Experimental studies in the personal and imaginative use of photographic materials. Emphasis on antiquated and recent photographic materials and approaches. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 3237. Color Photography. (3) Prerequisite: ARTS 3235 or consent of instructor. Introduction to photographic color theory and color aesthetics. Studio work limited to the color slide medium. Three lecture hours, three lab hours. Lab fee. *(On demand)*

ARTS 3240. Intermediate Printmaking Studio. (3) Prerequisite: one of the following—ARTS 2240, 2241, 2242 or 2243. Development of intermediate skills in any or combined graphic techniques (etching, woodcut, lithography, silk screen, collography, drawing or collage). Special emphasis on color printing and artistic themes. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring, Summer)*

ARTS 3245. Intermediate Sculpture. (3) Prerequisite: ARTS 2245 or consent of instructor. Studio course designed to continue exploration of three-dimensional forms and concepts while introducing a variety of new materials and advanced techniques, including metal-casting. May be repeated for credit. Three lecture hours, and three lab hours. Lab fee. *(Spring)*

ARTS 3250. Visual Communication and Design I. (3) Prerequisite: ARTS 1201 or consent of instructor. Development of creative solutions in graphic and communication design with emphasis on exploring the equipment, materials, techniques, and procedures for graphic indication, layout, and comprehensive layouts. Three lecture hours, three lab hours. Lab fee. *(Fall)*

ARTS 3251. Visual Communication and Design II. (3) Prerequisite: ARTS 3250 or consent of instructor. Individual solutions to more complex and integrated design problems including graphic photography, finished comprehensive layouts, concept and theme development. Three lecture hours, three lab hours. Lab fee. *(Spring)*

ARTS 3479. Student Teaching in Visual Arts. (12) Prerequisite: senior standing in the Teacher Certification track of the BCA degree program. A 14-week practicum in the teaching of visual arts at the elementary and secondary levels. Substitutes for ARTS 3692. Weekly seminar. Three lecture hours, 40 lab hours. *(Fall, Spring)*

ARTS 3601. Junior Individual Project I. (3) Prerequisite: ARTS 2601. Majors only. *(Fall, Spring, Summer)*

ARTS 3602. Junior Individual Project II. (3) Prerequisite: ARTS 3601. Majors only. *(Fall, Spring, Summer)*

ARTS 3691. Senior Individual Project I. (6) Prerequisite: ARTS 3602. Majors only. Three contact hours. *(Fall, Spring, Summer)*

ARTS 3692. Senior Individual Project II. (6) Prerequisite: ARTS 3691. Majors only. Three contact hours. *(Fall, Spring, Summer)*

Women's Studies

INTERDISCIPLINARY STUDIES

Coordinator: Associate Professor Getz

Women's Studies is an academic pursuit devoted to the collection of information and the development of theories about women's roles and contributions to society. The goal of the Women's Studies Program is to provide an educational program that examines gender-related issues across cultures and across disciplines. The Program offers courses in Women's Studies and presents lectures and conferences on gender issues in business, the humanities, the sciences and the social sciences.

The minor in Women's Studies is designed to allow students to pursue an interdisciplinary and multicultural study of women's experience and contributions while fulfilling the academic requirements for one of the approved University degree programs.

WOMEN'S STUDIES MINOR

The Women's Studies minor, as well as each individual Women's Studies course, is open to all students at UNC Charlotte. Students seeking the minor will plan their program with their departmental advisers and with the Women's Studies Coordinator. They must fulfill general degree requirements and requirements for their selected major. In addition, they must complete a minimum of 21 hours of courses approved for the Women's Studies minor, including WMST 3101 (Introduction to Women's Studies), 3201 (Feminist Thought) and 4601 (Senior Colloquium). Other courses are offered in established departments of The University. Any hours offered for the Women's Studies minor may also be counted toward major and general degree requirements. A maximum of nine credit hours may be approved from any one department. In order to qualify for the Women's Studies minor, students must have at least a 2.0 grade point average in courses taken for the minor.

Following is a sample of the courses approved to satisfy requirements for the minor in Women's Studies. Other courses of appropriate content are approved by the Coordinator as they are offered each semester. A complete list of these courses is available each semester in the Women's Studies Office.

AAAS 2201	Introduction to Human Relationships	HIST 2150	History of Women in the United States
ANTH 2121	Comparative Family Systems	POLS 3133	Women and Politics
ANTH 2145	Evolution of Human Sexual Behavior	SOCY 2132	Marriage and the Family
CSLG 5100	Counseling Needs of Women	SOCY 4261	Human Sexuality
ENGL 4002	Women and Literature	SOCY 4263	Sociology of Sex Roles
HUSV 1100	Exploration of Human Development		

Topics courses that have been offered include:

ENGL 3050	Feminist Approaches to Literature	NURS 4090	Women and Health
BUSN 3000	Women in Management	RELS 3000	Women and Religion
PHIL 3050	Women's Philosophical Perspective		

WOMEN'S STUDIES (WMST) COURSE DESCRIPTIONS

WMST 3101. Introduction to Women's Studies. (WV) (3) Introduction to (1) the impact of gender; (2) the role of values, institutions and socialization processes in the lives of women in our own and other cultures; (3) the contributions and uses of various disciplines in the study of women—including sociology, economics, psychology, political science, history, literature, art, philosophy and ethnic studies; and (4) the critical approaches, methodologies and tools for doing research related to women's experience. *(Fall, Spring)*

WMST 3050. Topics in Women's Studies. (W) (3) Investigation of specific issues in Women's Studies, either from the perspective of a single discipline or in a multidisciplinary fashion. May be repeated for credit with the permission of the Women's Studies Coordinator. *(Alternate years)*

WMST 3201. Feminist Thought. (VL) (3) Prerequisite: WMST 3101. Cross-cultural and interdisciplinary survey of the main traditions of feminist theory in the context of their historical and philosophical roots. Required for Women's Studies minor. *(On demand)*

WMST 3803. Independent Study. (3) Prerequisite: permission of instructor and Women's Studies Coordinator. Supervised individual study and/or field-based experience in a topic or area of Women's Studies of particular interest to the student. May be repeated for credit. *(Fall, Spring)*

Courses for advanced undergraduate and graduate students

WMST 4101. Applied Research/Field Work. (C) (3) (3G) Prerequisite: WMST 3101 or permission of the Women's Studies Coordinator. Research and in-service training in cooperative community organizations which provide services to women and their families. Specific content based on contract between student, supervising professor and community organization. *(On demand)*

WMST 4601. Senior Colloquium. (3) (3G) Prerequisites: completion of 15 hours in Women's Studies, or permission of instructor. Critical examination of selected issues. Required for Women's Studies minor. *(On demand)*

Courses for Graduate Students Only

WMST 6800. Directed Reading/Research. (3G) Prerequisites: prior written permission of instructor and Women's Studies Coordinator. Independent investigation of a problem or a topic in Women's Studies, culminating in a research paper or a final report. Student must provide a written plan of work before registering for the course. May be repeated for credit. *(On demand)*

College of Business Administration

Dean: Professor Neel; *Associate Dean:* Associate Professor Conboy

Objectives. The College of Business Administration is committed to excellence in instruction at both the undergraduate and the graduate levels. The College provides a broad educational base which will help prepare the student for responsible leadership in business and professional life. The academic programs and methods of instruction are designed to maximize the opportunities for each student to develop his/her full intellectual potential.

In addition to the teaching mission, the College of Business Administration has a research role and a service role. Through research, publication and participation in the programs of professional organizations, the College seeks to make a contribution to the advancement of knowledge and to assist faculty members in their own professional development.

The service thrust covers both the internal dimension within The University and the external, or public, dimension. The College faculty is active in the committee and other service work of their respective departments, the College and The University. The College faculty also provides their expertise to a wide range of community, business and governmental groups and organizations.

Programs. The College of Business Administration offers the following bachelor's degree programs:

Bachelor of Science degree in Accounting. This program offers full academic preparation for the Certified Public Accountant (CPA) designation.

Bachelor of Science in Business Administration degree. Students pursuing this degree will choose one of the following concentrations:

Finance
General Business
International Business
Management
Management Information Systems
Marketing
Operations Management

Bachelor of Arts degree in Economics. Students in this program may choose either the Business Administration emphasis or the Social Science emphasis. The Department of Economics also offers a minor in Economics.

Programs are designed so that transfer students from community colleges and other institutions may enter the program and complete their degree requirements in the last two years of their college work. Students planning to take their first two years in community colleges should inform their adviser or counselor of their intent to apply to UNC Charlotte so that their program may be tailored to facilitate transfer.

The College offers a Master of Business Administration program and a program leading to the Master of Science (M.S.) degree in Economics. The MBA program is designed primarily for men and women who are fully employed and must undertake graduate study on a part-time basis. The M.S. in Economics program is designed for both full- and part-time students. See the Graduate section of this catalog for information about these programs.

Accreditation. All of the degree programs offered by the College of Business Administration are accredited by the American Assembly of Collegiate Schools of Business (AACSB), which is recognized by the U.S. Department of Education and the Council on Postsecondary Accreditation as the sole accrediting agency for baccalaureate and master's degree programs in business.

In addition, the Bachelor of Science degree program in Accounting is one of approximately 80 accounting programs in the country which have earned AACSB specialized accounting accreditation.

Satisfaction of Prerequisites and Enrollment in Upper-Division Courses. Students must meet the prerequisites stated for the courses in the College of Business Administration. Enrollment in the upper division (3000- and 4000-level) courses offered by the College of Business Administration is open to juniors and seniors only.

Cooperative Education Program. Cooperative Education opportunities involving alternating semesters of study and work are available in several departments within the College of Business Administration. The program provides the student with paid work experience in the professional world as well as knowledge from academic studies. Students must be able to complete a minimum of two alternating work and academic semesters. Usually, students begin the first work semester after completion of the sophomore year. For further information about the Cooperative Education program and the departments which participate in the program, contact the Office of Experiential Learning, 547-2073.

Evening Courses and Summer Sessions. All courses required in the Bachelor of Science in Business Administration degree program and the Bachelor of Science degree program in Accounting are offered in the evening, as well as during the day. The Master of Business Administration program is offered entirely in the evening. A full program of summer offerings is also available.

Scholarships. There are several scholarships available for students in the College of Business Administration. Some of the scholarships are designated to recognize academic excellence in the junior and senior years. Further information can be obtained from the Financial Aid Office at UNCC.

PREBUSINESS

Students seeking admission to the Departments of Finance and Business Law, Management, Management Information Systems and Operations Management, and Marketing will be classified as prebusiness students within the College of Business Administraton until they qualify for admission to a concentration. In order to qualify for admission to a departmental concentration the student must attain junior standing *and* have successfully completed the required 10 progression courses with a minimum grade point average of 2.5. Transfer students who have attained junior status and fulfilled the requirements for progression will be admitted directly to the department in which they select a concentration. Students are not permitted to enroll in any upper division courses (3000-level and above) in the College until they have been admitted to a department.

Department of Accounting

Chairperson: Professor Turner; *Professor:* Godfrey; *Associate Professors:* Bhamornsiri, Guinn, Hinson, Jolly, Malmgren, Nunley; *Assistant Professors:* Cathey, Cornick, Johns, Mynatt, Spear; *Associate Professor Emeritus:* Williamson; *Assistant Professor Emeritus:* Higgins; *Lecturer:* Baucom

The objective of the Accounting program is to educate students to commence and continue to develop in a wide range of professional accounting careers. This program provides conceptual and technical knowledge in the accounting and business areas which serves as a foundation for accounting career development.

The Accounting program is accredited by the American Assembly of Collegiate Schools of Business, which is recognized as the sole accrediting agency for baccalaureate degree programs in accounting by the U.S. Department of Education and by the Council on Postsecondary Accreditation. Graduates find a wide range of professional careers in public practice, industry, financial institutions, government and non-profit organizations. Students who complete a major in accounting will meet the educational requirements of the State of North Carolina to take the Certified Public Accountant Examination.

BACHELOR OF SCIENCE

A major in accounting leading to the B.S. degree consists of 30 semester hours of accounting courses, Political Science 1110, Communication Studies 1101, and 39 semester hours of related work in business administration, economics, mathematics and statistics. All students must also fulfill the general education requirements of The University.

In addition to the University requirements of a 2.0 minimum grade point average, a student must have at least a 2.0 grade point average in all 3000-level required accounting courses in order to obtain a B.S. degree.

Special Requirements for Acceptance into the Accounting Major with Freshman Standing and for Continuation into Junior- and Senior-Level Accounting Courses. Applicants must have a predicted

grade point average of at least 2.20 according to The University's calculation. A GPA of 2.75 or more in the following 10 courses is required for enrollment in required junior- and senior-level accounting courses: ENGL 1101 and 1102; MATH 1100, 1120 and STAT 1220; INFO 2130; ECON 2101 and 2102; and ACCT 2121 and 2122.

Special Requirements for Acceptance of Transfer Students into the Accounting Major. Applicants must present a grade point average of 2.75 or more in the following 10 courses or the portion they have completed: ENGL 1101 and 1102; MATH 1100, 1120 and STAT 1220; INFO 2130; ECON 2101 and 2102; and ACCT 2121 and 2122. Applicants who have not completed all 10 courses also must present an overall GPA of 2.5 or more. A GPA of 2.75 or more in the 10 courses is required for enrollment in required junior- and senior-level accounting courses.

SUGGESTED SCHEDULE: B.S. DEGREE

Freshman Year

ENGL 1101	3	ENGL 1102	3
GOAL IV	4	GOAL IV	4
MATH 1100 or 1101	3	MATH 1120	3
POLS 1110	3	COMM 1101	3
Elective	2	Elective	2

Sophomore Year

ACCT 2121	3	ACCT 2122	3
STAT 1220	3	ECON 2102	3
ECON 2101	3	INFO 2130	3
GOAL I: (W)	3	GOAL VI: (X)	3
GOAL III	3	GOAL V: (L)	3

Junior Year

ACCT 3138	3	ACCT 3136	3
MKTG 3110	3	ACCT 3139	3
INFO 3130	3	OPER 3100	3
MGMT 3140	3	FINN 3120	3
GOAL I: (W)	3	BLAW 3150	3

Senior Year

ACCT 3141	3	ACCT 3147	3
ACCT 3146	3	ACCT 3148	3
MGMT 3280	3	Electives	9
GOAL V: (A)	3		
ACCT 3140	3		

Students planning to take the CPA Exam are encouraged to take the following courses in their senior year:.

Accounting for Not-for-Profit Org. (ACCT 3130)	3 hrs.
CPA Preparation (ACCT 3149)	3 hrs.
Business Law II (BLAW 3250)	3 hrs.

NOTE: In order to avoid overspecialization, students should not normally take more than two elective courses in accounting.

ACCOUNTING (ACCT) COURSE DESCRIPTIONS

ACCT 2121. Principles of Accounting I. (3) Fundamental accounting principles, with emphasis on managerial use of accounting data and analysis of financial statements. Three lecture hours and one laboratory period of two hours a week. Lab period optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

ACCT 2122. Principles of Accounting II. (3) Prerequisite: ACCT 2121. Basic accounting theory; corporate financing and reporting; financial planning; and an introduction to managerial accounting. Three lecture hours and one laboratory period of two hours a week. Lab period optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

ACCT 2123. Fundamentals of Accounting. (3) Accelerated and in-depth introduction to the conceptual foundations of financial and managerial accounting. Appropriate as a foundation for further work in business management, personal financial management, estate planning, or applications to non-profit organizations. (Cannot be taken for credit by majors in College of Business Administration, but may be taken by MBA students to satisfy the accounting prerequisite.) Credit for ACCT 2123 cannot be applied toward ACCT 2121-2122. *(Fall, Spring) (Evenings)*

ACCT 3043. Current Developments in Accounting. (1) (2) or (3) May be repeated for credit. Prerequisite: consent of the Department. A research project will be required. Topics will be selected from internal and external auditing, governmental accounting, income taxes, managerial accounting and accounting theory. *(Fall, Spring, Summer) (Evenings)*

ACCT 3130. Accounting for Not-for-Profit Organizations. (3) Prerequisite: ACCT 2121 or equivalent. Accounting for governmental and other not-for-profit entities. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer)*

ACCT 3134. Federal Income Taxation. (3) Prerequisite: ACCT 2122. Open to non-Accounting majors only. Federal income tax laws and regulations applicable to individuals and business organizations. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall) (Evenings)*

ACCT 3136. Managerial Cost Accounting. (3) Prerequisite: ACCT 2122. Analysis of the uses of accounting data in planning, controlling and decision-making processes of business enterprises. Three lecture hours and two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

ACCT 3138. Intermediate Financial Accounting I. (3) Prerequisite: ACCT 2122 with a grade of *C* or better. Analysis of the requirements of outsiders (investors, auditors and governments) for information about the status and operations of firms. The application of various theories and concepts will be stressed. Three lecture hours and two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer) (Evenings)*

ACCT 3139. Intermediate Financial Accounting II. (3) Prerequisite: ACCT 3138 with a grade of *C* or better. Continuation of ACCT 3138 with an emphasis on accounting problems peculiar to corporate organizations. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring, Summer) (Evenings)*

ACCT 3140. Accounting Information Systems. (3) Prerequisites: STAT 1220, INFO 2130 and ACCT 3138. An introduction to accounting EDP systems, with particular emphasis on internal controls and computer auditing techniques. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Spring) (Evenings)*

ACCT 3141. Specialized Accounting Topics. (3) Prerequisite: ACCT 3139 with a grade of *C* or better. Specialized accounting topics with emphasis on consolidated statements. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer) (Evenings)*

ACCT 3146. Income Tax for Individuals. (3) Prerequisite: ACCT 2122 with a grade of *C* or better. Federal income tax laws and regulations applying to individuals. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall) (Evenings)*

ACCT 3147. Advanced Income Taxation. (3) Prerequisite: ACCT 3146. Federal income tax laws and regulations applying to partnerships, corporations, estates and trusts, and estate, gift and inheritance taxes. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring) (Evenings)*

ACCT 3148. Internal Control and Auditing. (3) Prerequisite: ACCT 3139 with a grade of *C* or better. Analysis of the accounting control systems and the independent auditor's examination of the system and other evidence as a basis for expressing an opinion on financial statements. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring) (Evenings)*

ACCT 3149. CPA Preparation. (3) Prerequisite: ACCT 3141. Intensive study of principles and techniques involved in the solution of advanced accounting problems encountered in public accounting practice. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring)*

ACCT 3150. International Accounting. (3) Prerequisites: ACCT 2121 and 2122 and junior standing. A study of accounting techniques worldwide and how different techniques affect multinational firms and day to day international business practices. *(Fall, Spring, Summer)*

Department of Economics

Chairperson: Professor Davis; *Professors:* Madsen, Zuber; *Professor Emeritus:* Wubben; *Associate Professors:* Amato, Connaughton, Gandar, Liner, Schwarz, Tucker; *Associate Professor Emeritus:* Rogers; *Assistant Professors:* Abell, Galopin, Graham, Green, Miller, Russo, Tseng

The study of economics offers students a problem-solving discipline to foster their intellectual and career development. It provides students a balanced and broad educational background and prepares them to choose from a wide range of career alternatives.

The Economics program explores the economic decisions of individuals, businesses, governments and other institutions. It examines the nature of economic activity, why it takes place and how it affects everyone's lives. The program includes elective courses which enable students to tailor their educational program to meet personal needs and interests. The study of economics also helps students develop a way of thinking that is logical and rigorous. It provides decision-making tools that they can apply to personal as well as business decisions and use to address the many economic decisions they will face in the future.

The Economics Department offers two programs leading to the Bachelor of Arts degree. Students who plan to pursue careers in business-related fields such as banking, finance and international commerce, or who plan to enter an MBA program, are encouraged to elect the business administration emphasis program. Students planning to pursue a career in education, enter graduate school in economics, or attend law school are encouraged to pursue the program with social science emphasis.

Students transferring from outside The University or from other majors into the Department of Economics must have a 2.0 overall GPA and a 2.0 GPA in eight (8) specified courses: ENGL 1101 and 1102; MATH 1100 or 1101, 1120; STAT 1220; BUSN 2130; and ECON 2101 and 2102.

All majors in economics must complete MGMT 3160: Business Communications prior to registering for any 4000 level economics course. Students transferring into the economics program as a senior must complete MGMT 3160 their first semester in the program.

In computing the grade point average in the major all required courses are included. Not more than one grade of *D* will count toward the specified hours for a major in economics. No economics course can be repeated more than once to improve the grade in the course. The second and any subsequent grade(s) in a repeated course(s) will be included in all GPA calculations.

It is recommended that students who plan graduate work in economics complete MATH 1141, ECON 4112 and ECON 4117. Also, they should consider additional work in mathematics but should consult with their advisers concerning specific courses.

BACHELOR OF ARTS

Business Administration Emphasis. A major in economics, with business administration electives, leading to the B.A. degree consists of 63 hours specified as follows:

I. Mathematics:
- Basic Concepts of Mathematics (MATH 1101 or 1100)* 3
- Calculus (MATH 1120)* 3
- Elements of Statistics (STAT 1220) 3
- Business Computing (INFO 2130) 3

II. Economics:
- Principles of Economics (ECON 2101** and 2102**) 6
- Economics of the Firm (ECON 3125) 3
- Econometrics (ECON 3112) 3
- Industrial Organization and Public Policy (ECON 4180) 3
- Two of the following:
  - Money and Banking (ECON 3115)
  - Microeconomic Analysis (ECON 3122)
  - Macroeconomic Analysis (ECON 3123) 6

III. Business Administration and Accounting:
- Principles of Accounting (ACCT 2121 and 2122) 6
- Financial Management (FINN 3120) 3
- Business Communications (MGMT 3160) 3
- Two of the following:
  - Marketing Management (MKTG 3110)
  - Business Law I (BLAW 3150)
  - Operations Management (OPER 3100)
  - Management Concepts and Practices (MGMT 3140) 6

IV. Economics Electives:
- To be selected by the student from the 3000- and 4000-level offerings of the Department of Economics 12

Social Science Emphasis. A major in economics, with social science electives, leading to the B.A. degree consists of 72 hours specified as follows:

I. Mathematics:
- Basic Concepts of Mathematics (MATH 1101 or 1100)* 3
- Calculus (MATH 1120)* 3
- Elements of Statistics (STAT 1220) 3
- Business Computing (INFO 2130) 3

II. Economics:
- Principles of Economics (ECON 2101** and 2102**) 6
- Business Communications (MGMT 3160) 3
- Microeconomic Analysis (ECON 3122) 3
- Macroeconomic Analysis (ECON 3123) 3
- Econometrics (ECON 3112) 3
- Econometrics II (ECON 4100) 3
- Business and Economic Forecasting (ECON 4117) 3
- Mathematical Economics (ECON 4100) 3
- History of Economic Thought (ECON 4177***) 3

III. Social Science Electives:
- Coursework to be selected from at least three of the following disciplines: anthropology, criminal justice, geography, history, political science, psychology, sociology, and social work 15

**Will satisfy general education requirement for GOAL II: Problem Solving. (See pages 63-67.)*
***Will satisfy general education requirement for GOAL VI: Individual, Society and Culture.*
****Will satisfy general education requirement for GOAL I: Communication, Writing Intensive.*

IV. Economics Electives:
To be selected by the student from the 3000- and 4000-level offerings of the Department of Economics 15

Coursework satisfying general University requirements will not count toward the 15-hour Social Science requirement.

Cooperative Education Program. Economics majors may obtain practical work experience by participating in cooperative education. Students in this program alternate semesters of academic study with semesters of work experience approved by the Department. Students interested in learning more about the Cooperative Education Program should contact the Department of Economics.

ECONOMICS MINOR

A minor in economics requires: 18 semester hours of economics to include ECON 2101, 2102 and either 3125 or 3122, and at least nine additional hours at the 3000 or 4000 level excluding 3102 and 3103. A minimum GPA of 2.0 is required in the 18 hours.

In computing the grade point average in the minor all required courses are included. Not more than one grade of *D* will count toward the specified hours for a minor in economics. No economics course can be repeated more than once to improve the grade. The second and any subsequent grade(s) in a repeated course(s) will be included in all GPA calculations.

SUGGESTED SCHEDULE: BUSINESS ADMINISTRATION EMPHASIS

Freshman Year

ENGL 1101	3	ENGL 1102	3
MATH 1100 or 1101	3	MATH 1120	3
GOAL IV	4	GOAL IV	4
GOAL V: (A)	3	GOAL VI: (C)	3
Elective	2	Elective	2

Sophomore Year

ECON 2101	3	ECON 2102	3
INFO 2130	3	ACCT 2122	3
ACCT 2121	3	STAT 1220	3
GOAL III	3	GOAL I: (W)	3
GOAL VI: (X)	3	GOAL V: (L)	3

Junior Year

ECON 3112	3	ECON 3125	3
ECON 3122 or ECON 3115	3	ECON 3123 or ECON 3115	3
Economics Elective	3	Economics Elective	3
GOAL I: (W)	3	Business Elective	3*
MGMT 3160	3	Elective	3

Senior Year

ECON 4180	3	Economics Elective	3
FINN 3120	3	Business Elective	3*
Economics Elective	3	Electives	9
Electives	6		

**Two courses are to be selected from the four courses listed on page 206.*

SUGGESTED SCHEDULE: SOCIAL SCIENCE EMPHASIS

Freshman Year

ENGL 1101	3	ENGL 1102	3
MATH 1100 or 1101	3	MATH 1120	3
GOAL IV	4	GOAL IV	4
GOAL V: (A)	3	GOAL VI: (C)	3
Elective	2	Elective	2

Sophomore Year

ECON 2101	3	ECON 2102	3
INFO 2130	3	Social Science Elective	3
Social Science Elective	3	STAT 1220	3
GOAL III	3	GOAL I: (W)	3
GOAL VI: (X)	3	GOAL V: (L)	3

Junior Year

ECON 3112	3	ECON 3123	3
ECON 3122	3	ECON 4100	3
Social Science Elective	3	Economics Elective	3
GOAL I: (W)	3	Social Science Elective	3
MGMT 3160	3	Electives	6

Senior Year

ECON 4117	3	ECON 4112	3
Social Science Elective	3	ECON 4177	3
Economics Electives	6	Economics Electives	6
Elective	3	Electives	3

ECONOMICS (ECON) COURSE DESCRIPTIONS

Courses for Undergraduates

ECON 1090. Topics in Economics. (1-3) Consideration of topics from the areas of economic theory, economic development, consumer economics, welfare economics and current economic problems. May be repeated for credit as topics vary. *(On demand)*

ECON 1101. Economics for Non-Majors. (3) Economic issues without emphasis on theoretical models. Contemporary economic issues such as pollution control, consumer protection and the energy crisis. May not be taken for credit if credit has already been received for either ECON 2101 or 2102. *(On demand)*

ECON 2101. Principles of Economics-Macro. (C) (3) Prerequisite: Sophomore standing. Scope and methodology of economics as a social science, the measurement of national income, the theory of national income determination, money and banking, monetary and fiscal policy, and international economics. *(Fall, Spring, Summer) (Evenings)*

ECON 2102. Principles of Economics-Micro. (C) (3) Prerequisite: Sophomore standing. Pricing mechanism of a market economy, the industrial organization of the U.S. economy, problems of economic concentration, the theory of income distribution, and comparative economic systems. *(Fall, Spring, Summer) (Evenings)*

ECON 2103. Economic Concepts. (3) Microeconomic and macroeconomic concepts for students without prior courses in economics. The scope and method of economics, the pricing mechanism of markets, the industrial organization of the U.S. economy, the measurement of national income, the theory of national income determination, money and banking, and monetary and fiscal policy. (Cannot be taken for credit by majors in College of Business Administration, but may be taken by MBA students to satisfy the economics prerequisite.) Credit will not be given for ECON 2103 where credit has been given for ECON 2101 or ECON 2102. *(Fall, Spring) (Evenings)*

ECON 2105. Consumer Economics. (3) Economic analysis of consumer issues with emphasis on economic decision making. Topics include consumer protection and government regulation, determination of family income, advertising, health care, inflation, taxation, and investment decisions. May not be taken for upper-level credit in business or economics, but may be taken for general University credit. *(On demand)*

ECON 3090. Topics in Economics. (3) Prerequisite: consent of the Department. Topics from the areas of economic theory, economic development, consumer economics, welfare economics and current economic problems. May be repeated for credit. *(On demand)*

ECON 3105. Industrial Relations. (3) Prerequisite: introductory course in economics or consent of instructor. Systematic analysis of the sociological, economic and legal forces affecting the work environment. Emphasis on labor unions and employment law. *(Fall, Spring)*

ECON 3106. Labor Economics. (3) Prerequisites: ECON 2101 and 2102. Economics of labor markets with emphasis on wage and employment theory, collective bargaining, and human capital theory. Historical and legal forces affecting labor markets. *(Spring)*

ECON 3107. Employment Law. (3) Legal principles and legislation which control employment decisions in union and non-union settings. Topics include fair employment practices, anti-discrimination law, representation elections, unfair labor practices and dispute settlement processes. (Same as BUSN 3151.) *(On demand)*

ECON 3112. Econometrics. (3) Prerequisites: ECON 2101 and 2102, MATH 1120 or 1141, STAT 1220 and INFO 2130. Econometric techniques including simple and multiple least squares regression with problems and analyses. *(Fall, Summer)*

ECON 3114. Research Methods. (3) Prerequisites: STAT 1220, INFO 2130, and ECON 3112 or 3117. Introduction to research in economics including major sources of data and information with emphasis on application of elementary research methods to economic problems. *(On demand)*

ECON 3115. Money and Banking. (3) Prerequisite: ECON 2101. The characteristics and functions of money in the modern economy, monetary theory and policy, and financial institutions. *(Fall, Spring, Summer)*

ECON 3122. Microeconomic Analysis. (3) Prerequisites: ECON 2101 and 2102 and MATH 1120 or 1141. Microeconomic analysis with emphasis on consumer theory and the theory of production. Resource allocation and the determination of optimum output and pricing by a firm operating under various market structures. Distribution and welfare theories. *(Fall)*

ECON 3123. Macroeconomic Analysis. (3) Prerequisites: ECON 2101 and 2102 and MATH 1120 or 1141. Analysis of economic aggregates with inflation, unemployment, and income determination. Keynesian, Classical, Monetarist, and supply side models. *(Spring)*

ECON 3125. Economics of the Firm. (3) Prerequisites: ECON 2102, MATH 1120 or 1141, and STAT 1220. Economic decisions of particular interest to business firms. Topics include demand theory and forecasting; cost analysis and pricing policies. *(Fall, Spring, Summer) (Evenings)*

ECON 3131. Economic History of the United States. (3) Prerequisite: ECON 1101 or 2101 or 2102. Use of economic models to further understanding of the growth and development of the U.S. economy from colonial times to the Great Depression. Emphasis on the sources and consequences of American growth, with particular emphasis on technological, demographic, and institutional changes. *(On demand)*

ECON 3133. Economic History of Europe. (3) Prerequisite: ECON 1101 or 2101 or 2102. Use of economic models to further understanding of the economic development of Europe from the early modern period to the present. Emphasis on the demographic, institutional, and technological changes underlying the process of economic growth and the impact of European economic growth on the rest of the world through international trade, investment, and migration. *(On demand)*

ECON 3175. Comparative Economic Systems. (3) Prerequisite: ECON 2102. Compares and contrasts capitalism, socialism, and communism both in theory and practice. *(Fall)*

ECON 3500. Cooperative Education Experience. (0) Enrollment in this course is required for the Department's Cooperative Education students during any semester they are working in a Co-op position. Restricted to majors in the Department of Economics. *(On demand)*

ECON 3895. Directed Individual Study. (1-3) Prerequisites: permission of the instructor and the Department. Independent study of a theoretical and/or a policy problem in a special area of economics. Students may pursue a particular program in depth. Topics of the investigation may originate from the student or from the faculty member supervising the study. May be repeated for credit. *(Fall, Spring, Summer) (Evenings)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

ECON 4100. Mathematical Economics. (3) (3G) Prerequisites: ECON 2101 and 2102 and MATH 1120 or 1141. Both microeconomic and macroeconomic problems are analyzed with quantitative techniques. Emphasis is given to the study of methods for mathematically formulating economic relationships including the tools used for finding maximums, minimums and limits to single, recursive and simultaneous economic relationships. *(Alternate years)*

ECON 4105. Negotiations and Bargaining Strategy. (3) (3G) Prerequisites: ECON 2102 and 3105. Theories of negotiation strategy. Emphasis on the negotiation of collective bargaining contracts. Topics include the use of arbitration, mediation, conciliation and fact-finding boards to resolve disputes. *(On demand)*

ECON 4112. Econometrics II. (3) (3G) Prerequisite: ECON 3112 or consent of instructor. Tools of analysis are more extensive and of a greater depth than those studied in ECON 3112. Regression and correlation techniques are applied to economic and business problems derived from government and business environments. *(Alternate years)*

ECON 4116. Public Sector Economics. (3) (3G) Prerequisites: ECON 3122. Revenue and expenditure problems of governmental units, intergovernmental financial relationships and the impact of federal fiscal policy upon the American economy. *(On demand)*

ECON 4117. Business and Economic Forecasting. (3) (3G) Prerequisite: ECON 3112. Analysis of fluctuations in economic activity, including production, employment, prices and industry sales. Topics include forecasting methods, business cycle theories, historical record, industry and sales forecasting. *(On demand)*

ECON 4135. Economics of Development. (3) (3G) Prerequisite: ECON 2102. Theories of economic growth and development applied to varying economic and social systems. Current theoretical models and their relevance to efficient allocation of resources to both the developed and the developing nations. *(On demand)*

ECON 4150. Urban and Regional Economics. (3) (3G) Prerequisite: ECON 2102. Spatial and economic organization of cities and regional areas and their special economic problems. Topics include economic growth, urban location and land use, poverty, housing, public finance and urban transportation. *(On demand)*

ECON 4160. Economics of Transportation. (3) (3G) Prerequisite: ECON 2102. Analysis of transportation systems. Topics include the historical development of various modes, costs and rate-making, regulation and national transportation policy. *(On demand)*

ECON 4171. Economics of International Trade. (3) (3G) Prerequisites: ECON 3122. Theory of international trade. Topics include determination of international trade patterns, welfare implications of international trade, economic integration, and effects of tariffs and quotas. *(Fall)*

ECON 4172. Economics of International Finance. (3) (3G) Prerequisites: ECON 3123. Survey of international monetary theory. Topics include exchange rate determination, balance of payments and adjustment, international liquidity, capital movements, international financial organizations and monetary reform proposals. *(Spring)*

ECON 4177. History of Economic Thought. (W) (3) (3G) Prerequisites: ECON 2101 and 2102. History of economics as a science and the evolution of theories of value, distribution and employment. Review of the works of Adam Smith, Thomas Malthus, David Ricardo, Karl Marx, Alfred Marshall, Thorstein Veblen, and John Maynard Keynes. *(Spring)*

ECON 4180. Industrial Organization and Public Policy. (3) (3G) Prerequisite: ECON 3122. An examination of the characteristics of monopolistic competition, oligopoly, and monopoly and questions of public policy in dealing with problems created by industrial concentration. *(Fall, Summer)*

ECON 4181. Energy and Environmental Economics. (3) (3G) Prerequisite: ECON 2102. Introduction to the economic issues of both energy and environment. Energy issues include the historical development of energy resources, supply and demand considerations and projections of the future energy balance. Environmental issues are externalities, common property resources and government regulation. Policy considerations include environmental standards, pollution charges and property rights. Cost-benefit analysis and microeconomic theory are applied. *(On demand)*

ECON 4182. Public Utilities. (3) (3G) Prerequisite: ECON 2102. Economic issues of public utilities, with emphasis on the theory and methods of rate-making and regulation. *(On demand)*

ECON 4449. Work-Study Program in Economics. (3-6 or 3-6G hours credit, by determination of Department of Economics.) Prerequisites: ECON 2101 and 2102. Enrollment granted only by permission of the Department of Economics. Prior to enrollment, plans for the student's work assignments in this course must be completed. Assignments in government, utilities, banking and other paid employment must utilize the techniques and principles learned in core requirements in economics. Work assignments require faculty contact with the student and employer to insure satisfactory performance by the student. A maximum of three hours can be used to meet upper-level economics elective requirements. *(Fall, Spring, Summer) (Evenings)*

Undergraduate credit is available for ECON 5090, 5102 and 5120 (graduate-level courses). For complete course descriptions, see page 340.

Department of Finance and Business Law

Chairperson: Associate Professor Nunnally; *Professors:* Trosch, Walls;
Associate Professor: Kennedy; *Assistant Professors:* Blose, Khan, Lamb, Plath;
Adjunct Assistant Professor: Miller; *Lecturer:* Brown

The Department of Finance and Business Law prepares students for financial leadership within organizations and provides them with an understanding of the legal environment in which these organizations operate. Through the program students will acquire background which will enable them to understand:

a. the concepts, process and institutions involved in planning for, acquiring and allocating capital with respect to modern business organizations;
b. the economic and legal environment of organizations, as well as the social and political influences on business;
c. the concepts and methods of economics, accounting, mathematics, management, information systems and business law.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Students concentrating in Finance receive a Bachelor of Science in Business Administration degree with a major in Business Administration. The B.S.B.A. degree requires a minimum of 120 semester hours, including 45 hours of core courses within the College of Business Administration, 15 hours in the finance concentration, nine hours of mathematics and statistics, and completion of the University general education requirements. In addition to the nine hours of mathematics and statistics, at least 33 hours of coursework must be taken outside the College of Business Administration.

Courses which fulfill the College core and mathematics and statistics requirements are: ACCT 2121, 2122 and 3136; BLAW 3150; ECON 2101, 2102 and 3125; FINN 3120; INFO 2130 and 3130; MGMT 3140, 3160 and 3280; MKTG 3110; OPER 3100; MATH 1100 or 1101 and 1120; and STAT 1220. A student must have a GPA of at least 2.0 for all academic work, with no more than one *D* in the hours required for the major. No course may be repeated more than twice.

FINANCE CONCENTRATION

The finance concentration is designed to develop analytical competence in corporate (business) finance, financial institutions, investment analysis, international finance, and asset valuation. Particular areas of emphasis are the planning of funds acquisition and the allocation of these funds. Students must complete any four of the following courses: FINN 3220-Financial Analysis, FINN 3221-Financial Institutions and Markets, FINN 3222-Investment Analysis, FINN 3223-International Finance, FINN 3224-Advanced Financial Management, and FINN 3225-Commercial Bank Management.

Progression Requirements. Students will not be admitted to the Department until they have attained junior standing and completed all of the following courses with a minimum GPA of 2.5: ACCT 2121 and 2122; ECON 2101 and 2102; ENGL 1101 and 1102; MATH 1100 or 1101 and 1120; STAT 1220; and INFO 2130. Students may not enroll in any courses numbered 3000 or higher within the College until this progression requirement is met. Students are not permitted to repeat any 3000-level course more than twice.

SUGGESTED SCHEDULE: FINANCE CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1,3]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V: (L)	3
GOAL V: (A)	3	Elective	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
STAT 1220[1]	3	GOAL VI: (X)	3
GOAL I: (W)	3	INFO 2130[1]	3
(Outside major)		GOAL IV	4
GOAL VI: (C)	3		

Junior Year

FINN 3120	3	OPER 3100	3
BLAW 3150	3	MKTG 3110	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MGMT 3140	3
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280[2]	3
Finance Concentration[2]	9	Finance Concentration[2]	3
Elective	3	Electives	6

[1]Prerequisite for upper-division required business courses.
[2]To be taken after all 3000-level required business core courses have been completed.
[3]MATH 1141 (Differential and Integral Calculus I) may be substituted for MATH 1120. Students preparing for graduate studies are advised to take MATH 1141.

FINN 2170. Personal Finance. (3) A course in the management of personal and family financial affairs. Topics include family financial planning and budgeting, saving for financial emergencies, consumer purchases and the use of credit, security and real estate investments, protection against premature death or disability, providing retirement income, insurance needs, income and estate tax planning. *(Fall, Spring) (Evenings)*

FINN 2171. Principles of Insurance. (3) A study of the different types of nonspeculative risks faced by individuals and businesses and the possible alternative methods of treating such risks. An examination of the specific application of these methods with regard to life, health, property, casualty and liability insurance contracts. *(On demand)*

FINN 2172. Real Estate. (3) A survey of problems involved in the acquisition, management and transfer of real estate. Topics include real estate contracts and leases; deeds, mortgages and other liens; real estate brokerage; appraisals and financing; taxation; and government regulations. *(On demand)*

FINN 3000. Topics in Finance. (3) Prerequisite: junior standing. Topics from the area of Finance. The course may be repeated for credit. *(On demand)*

FINN 3120. Financial Management. (3) Prerequisites: MATH 1100 or 1101, 1120, STAT 1120; ECON 2101, 2102; ACCT 2121, 2122; junior standing. Principles and problems of financial aspects of managing capital structure, least-cost asset management, planning and control. Computer application will be included where appropriate. *(Fall, Spring, Summer) (Evenings)*

FINN 3220. Financial Analysis. (3) Prerequisite: FINN 3120. Emphasis on interpretation of financial statements and other data for internal management purposes as well as external applications for commercial credit decisions (domestic and foreign). Practical application is stressed through the use of cases and other techniques such as class presentations. *(Fall, Spring, Summer) (Evenings)*

FINN 3221. Financial Institutions and Markets. (3) Prerequisite: FINN 3120. A study of financial institutions and money and capital markets which considers their roles in the intermediation process. Special emphasis is focused on the comparative financial policies of financial institutions considered in the context of their market environments. *(Fall, Spring, Summer) (Evenings)*

FINN 3222. Investments. (3) Prerequisite: FINN 3120. Major topics are security analysis and portfolio management. The viewpoint is that of the investment professional concerned with evaluation of individual securities and management of security portfolios. *(Fall, Spring, Summer) (Evenings)*

FINN 3223. International Financial Management. (3) Prerequisite: FINN 3120. Viewpoints are those of the senior financial officer of a corporation involved in international business and of the international officer of a commercial bank . Topics include the financing of exports and imports, financing of foreign operations, problems of foreign exchange rates and the impact of accounting procedures on financial management. *(Fall, Spring, Summer) (Evenings)*

FINN 3224. Advanced Financial Management. (3) Prerequisite: FINN 3120. Advanced study of the theories and techniques of financial management as they relate to the goal of the financial manager: the maximization of the value of the firm. Topics include financial planning, valuation, financial instruments, financial structure, and capital budgeting. *(Fall, Spring, Summer) (Evenings)*

FINN 3225. Commercial Bank Management. (3) Prerequisite: FINN 3120. A study of sound and efficient techniques for the management of commercial banks. Topics include industry structure, administrative organization, and management of assets, liabilities and capital. *(Fall, Spring, Summer) (Evenings)*

FINN 3226. Financial Theory and Practice. (3) Prerequisite: FINN 3120. Modern financial theory and it's application, including risk theory, market equilibrium asset pricing models, efficient market theory, capital structure theory and applications (including issues surrounding financial distress and bankruptcy), dividend policy, agency problems, informational asymmetry, advanced topics in capital budgeting, and leasing. *(Fall, Spring, Summer) (Evenings)*

***FINN 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op position. This course is restricted to majors in Finance. Course evaluation is Satisfactory/Unsatisfactory. *(Spring, Summer, Fall)*

FINN 3800. Directed Study. (1-6) Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

*Before applying for the co-op program, a major in the Department of Finance and Business Law must have completed 30 credit hours with a minimum overall GPA of 2.5. A transfer student must have completed 30 credit hours with at least 15 hours at UNCC and a minimum GPA of 2.5 in UNCC courses. Before enrolling in FINN 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.5 and the student's major coursework through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in FINN 3500. These courses will be established by the co-op adviser and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.

BUSINESS LAW (BLAW) COURSE DESCRIPTIONS

BLAW 3150. Business Law I. (3) Prerequisite: junior standing. A study of the legal setting of business and its relationship to the business firm. Topics covered include: the nature of law and the court system, torts, contracts, commercial paper, consumer credit, sales, partnerships, corporations, the employer-employee relationship, real and personal property. *(Fall, Spring, Summer) (Evenings)*

BLAW 3250. Business Law II. (3) Prerequisite: BLAW 3150. The study of the Uniform Commercial Code. Subjects covered include sale of goods, commercial paper, bank deposits and collections, letters of credit, bulk transfers, documents of title, investment securities and secured transactions. *(Fall, Spring, Summer) (Evenings)*

BLAW 3252. Construction Law. (3) Prerequisite: junior standing. Examination of the legal problems encountered by architects, engineers, contractors, owners, sureties and lenders involved in the construction process. Special emphasis on the legal rights and liabilities of the various participants in construction projects. Claims preparation, negotiation, arbitration and litigation methods of dispute resolution. *(On demand)*

BLAW 3253. International Business Transactions. (3) Prerequisites: BLAW 3150, junior standing. An examination of the role of law in developing and conducting international business. Topics covered will include Multinational Enterprises, International Trading of Goods, Regional Economic Communities, Import/Export Regulation, Technology Transfer, and International Dispute Settlement. *(On demand)*

General Business Concentration

The goal of the General Business concentration is to permit the student to select a combination of business courses which will best fit his or her educational objectives. The General Business concentration is available to the student who chooses not to specialize.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Students concentrating in General Business receive a Bachelor of Science in Business Administration degree with a major in Business Administration. The B.S.B.A. degree requires a minimum of 120 semester hours, including 45 hours of core courses within the College of Business, 12 hours in the general business concentration, nine hours of mathematics and statistics, and completion of the University general education requirements. In addition to the nine hours of mathematics and statistics, at least 33 hours of coursework must be taken outside the College of Business Administration.

Courses which fulfill the College core and mathematics and statistics requirements are: ACCT 2121, 2122 and 3136; BLAW 3150; ECON 2101, 2102 and 3125; FINN 3120; INFO 2130 and 3130;

MGMT 3140, 3160 and 3280; MKTG 3110; OPER 3100; MATH 1100 or 1101 and 1120; and STAT 1220. A student must have a GPA of at least 2.0 for all academic work, with no more than one *D* in the hours required for the major. No course may be repeated more than twice.

GENERAL BUSINESS CONCENTRATION

A concentration in general business requires that a student complete 12 hours from any four 3200-level courses offered by the Departments of Finance and Business Law, Management, Management Information Systems and Operations Management, and Marketing.

Progression Requirements. Students will not be admitted to a department or concentration until they have attained junior standing and completed all of the following courses with a minimum GPA of 2.5: ACCT 2121 and 2122; ECON 2101 and 2102; ENGL 1101 and 1102; MATH 1100 or 1101 and 1120; STAT 1220; and INFO 2130. Students may not enroll in any courses numbered 3000 or higher within the College until this progression requirement is met. Students are not permitted to repeat any 3000-level course more than twice.

SUGGESTED SCHEDULE: GENERAL BUSINESS CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V (L)	3
GOAL V (A)	3	Elective	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
STAT 1220[1]	3	GOAL VI (X)	3
GOAL I (W)	3	INFO 2130[1]	3
(Outside major)		GOAL IV	4
GOAL VI (C)	3		

Junior Year

MGMT 3140	3	OPER 3100	3
BLAW 3150	3	FINN 3120	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MKTG 3110	4
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280	3
Concentration	3	Concentration	3
Concentration	3	Concentration	3
Elective	3	Elective	3
Elective	3		

[1]*Prerequisite for upper-division required business courses.*

International Business Concentration

Coordinator: Associate Professor Weekly

The primary objective of the international business concentration is to provide an understanding of the importance of an international perspective on the part of business managers. The concentration draws upon the disciplines of the College of Business Administration to provide an integrated framework for the study of the economic and competitive environments in which international business firms operate and the impact of those environments upon managerial tasks and decisions.

Students selecting this concentration must complete MGMT 3274 - International Business Processes and Problems, FINN 3223 - International Financial Management, MKTG 3215 - International Marketing, and either ECON 4171 - Economics of International Trade or ECON 4172 - Economics of International Finance or MKTG 3218 - Export Marketing.

SUGGESTED SCHEDULE: INTERNATIONAL BUSINESS CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V (L)	3
GOAL V (A)	3	Foreign Language	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
STAT 1220[1]	3	GOAL VI (C)	3
GOAL I: (W) (Outside major)	3	INFO 2130[1]	3
Foreign Language	3	GOAL IV	4

Junior Year

MKTG 3110	3	OPER 3100	3
BLAW 3150	3	FINN 3120	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MGMT 3140	4
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280[2]	3
International Concentration	9	International Concentration	6
Elective	3	Electives	3

[1]Prerequisite for upper-division required business courses.
[2]To be taken after all 3000-level required business core courses have been completed.

Department of Management

Chairperson: Associate Professor Curran; *Associate Professors:* Geurin, Hornaday, Kohut, Nkomo, Sage; *Assistant Professors:* Beggs, Calvasina, Carpano, Conboy, Jernigan, Kerr, Klich, Smith; *Lecturers:* Baxter, Nikkel

A program of study in the Department of Management leads to a Bachelor of Science in Business Administration degree with a major in Business Administration and a concentration in Management, Personnel/Human Resource Management, or Small Business. Programs in the Department of Management are designed to teach students to plan, organize, direct, and control business activities in both the public and private sectors. Students develop skills in decision making, leadership, motivation, and problem solving.

Within the Business Administration major, students in the Department of Management must select one of three concentrations: Management, Personnel/Human Resource Management or Small Business. The concentration in Management prepares students for management careers in business, industry and government. Coursework prepares students for entry-level positions in areas such as distribution, manufacturing, retail, service and transportation. The concentration in Personnel/Human Resources Management prepares students to become Human Resource Management professionals. Coursework prepares students for entry-level positions in staffing, recruiting, training and development, wage and salary administration, and labor relations. The concentration in Small Business

prepares students to work in family businesses or become small business owners. The concentration provides the skills needed to manage small and medium-sized enterprises. Coursework prepares students to develop an overall concept for a business and identify the problems that must be considered and resolved if the venture is to be successful.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

A major in Business Administration leading to the B.S.B.A. degree requires a minimum of 120 semester hours, including 45 hours of progression and core courses within the College of Business Administration, 12 hours in the Management, Personnel/Human Resource Management or Small Business concentration, nine hours of mathematics and statistics, and completion of the University general education requirements. In addition to the nine hours of mathematics and statistics, at least 33 hours of coursework must be taken outside the College of Business Administration.

Students electing the Management, Personnel/Human Resource Management, or Small Business concentration must meet the following requirements:

1. Progression Requirements. Students will not be admitted to a Department or concentration until they have attained junior standing and completed all of the following courses with a minimum GPA of 2.5: ACCT 2121 and 2122; ECON 2101 and 2102; ENGL 1101 and 1102; MATH 1100 and 1120; STAT 1220; and INFO 2130. Students may not enroll in courses numbered 3000 or higher within the College until this progression requirement is met.

2. Core Requirements. Courses which fulfill the College core and the mathematics and statistics requirements for the major are ACCT 2121, 2122, and 3136; BLAW 3150; ECON 2101, 2102, and 3125; FINN 3120; INFO 3130; MGMT 3140, 3160, and 3280; MKTG 3110; OPER 3100; MATH 1100 and 1102; and STAT 1220. A student must have a GPA of at least 2.0 for all academic work, with no more than one *D* in the hours required for the major. No course may be repeated more than twice.

3. Concentration Requirements. Students must select one of the three concentrations listed below.

Management Concentration
(Select four of the following courses)

MGMT 3240 Leadership and Organizational Behavior
MGMT 3241 Personnel Administration
MGMT 3243 Employment Law
MGMT 3260 Managerial Communication
MGMT 3273 Small Business Management
MGMT 3274 International Business Processes and Problems
MGMT 3282 Business and Society

Personnel/Human Resource Management Concentration

MGMT 3241 Personnel Administration
MGMT 3244 Advanced Personnel/Human Resource Management

(Select two of the following courses)
MGMT 3240 Leadership and Organizational Behavior
MGMT 3242 Compensation Administration
MGMT 3243 Employment Law
ECON 3105 Industrial Relations

Note: Students electing this concentration are encouraged to select as part of their 33 hours of coursework outside the College of Business Administratioin such courses offered by the Department of Psychology as PSYC 2171 - Introduction to Industrial Organizational Psychology; PSYC 3140 - Basic Processes in Psychological Assessment; PSYC 3172 - Psychology of Personnel: Employee Selection and Classification PSYC 3173 - Psychological Bases of Training Programs; and PSYC 3670 - Seminar in Industrial Psychology.

Small Business Concentration

MGMT 3273 Small Business Management
MGMT 3283 Practicum in Small Business Planning
(Two senior-level business electives approved by the student's adviser)

Note: Participation in this concentration requires consent of the student's adviser and the Chair of the Department of Management.

SUGGESTED SCHEDULE: MANAGEMENT, PERSONNEL/HUMAN RESOURCE MANAGEMENT, SMALL BUSINESS CONCENTRATIONS

Freshman Year

ENGL 1101	3	ENGL 1102	3
MATH 1100	3	MATH 1120	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V (L)	3
GOAL V (A)	3	Elective	3

Sophomore Year

ACCT 2121	3	ACCT 2122	3
ECON 2101 or 2102 (GOAL VI (C))*	3	ECON 2101 or 2102 (GOAL VI (C))*	3
STAT 1220	3	GOAL VI (X)	3
GOAL I (W) (Outside Major)	3	INFO 2130	3
		GOAL IV	4

Junior Year

MGMT 3140	3	OPER 3100	3
BLAW 3150	3	FINN 3120	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MKTG 3110	3
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280	3
Concentration Courses	6	Concentration Courses	6
Electives	6	Elective	3

**Either ECON 2101 or 2102 satisfies GOAL VI (C).*

MANAGEMENT (MGMT) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates

MGMT 3000. Topics in Management. (3) Prerequisite: junior standing. Topics from the area of Management and Administration. The course may be repeated for credit. *(On demand)*

MGMT 3140. Management Concepts and Practice. (3) Prerequisites: ECON 2101, 2102; ACCT 2121, 2122; INFO 2130; junior standing. Study of the role of the contemporary manager with emphasis upon the behavioral and administrative processes fundamental to the successful operation of various types of enterprise. Situational approaches to management are explored with the manager viewed as a decision maker interacting with the firm's economic, technological, social, political and ethical environment. Examination of research and theory in organizational behavior, organization theory and interpersonal communication. Case analysis is used to simulate actual problems encountered in organizations. *(Fall, Spring, Summer) (Evenings)*

MGMT 3160. Business Communications. (3) Prerequisite: ECON 2101, 2102; ACCT 2120, 2122; INFO 2130; junior standing. The nature and problems of individual, interpersonal and organizational communication in business. Various verbal techniques such as presentations, graphics, public speaking and writing will be developed and practiced for effective organizational and individual performance. *(Fall, Spring, Summer) (Evenings)*

MGMT 3162. Business Interviewing Strategies. (3) Prerequisite: junior standing. Examination of the interview process in a variety of specific management contexts including: career selection and assessment, goal-setting, problem solving, decision making, employment interviewing and performance appraisals. Case studies and simulations are used to analyze and address interviewing problems. *NOTE: This course may be taken as a general university elective; it does not satisfy a requirement for any concentration in the College of Business Administration. (Fall)*

MGMT 3173. Being Your Own Boss: Small Business Management for Non-Business Majors. (3) Prerequisites: junior standing. A course for non-business majors who plan to be self-employed as professionals (engineers, psychologists, social workers, free-lance writers, nurses, etc.) or as owners of small enterprises such as theatre groups, art galleries, advertising agencies or similar groups or who plan to work for small family firms after graduation. Includes all aspects of starting, operating and selling a small firm. Emphasizes case studies and practical applications using materials actually needed to operate a real-world firm. Requires preparation of a simulated business plan for the firm the student hopes to start. Not available for credit for College of Business Administration majors or students who receive credit for MGMT 3273. *(On demand)*

MGMT 3240. Leadership and Organizational Behavior. (3) Prerequisite: MGMT 3140. A managerial perspective of the influence of leadership, motivation, group dynamics, structure, communications, conflict and change on effective utilization and development of human resources with emphasis on the role of a leader as a change agent. Case analysis, role playing and skills development exercises are used to simulate actual situations. *(Fall, Spring) (Evenings)*

MGMT 3241. Personnel Administration. (3) Prerequisite: MGMT 3140. The study of effectively selecting, utilizing, assessing and developing managers as well as the role of the personnel department in administering human resources in a changing and demanding environment. Experience in developing and utilizing behavioral science research methods to assess effectiveness. *(Fall, Spring) (Evenings)*

MGMT 3242. Compensation Administration. (3) Prerequisites: MGMT 3140 and 3241. Approaches to the design and management of compensation systems. Topics include the objectives of pay systems, policy decisions that provide the foundation for different pay systems, and the tools and techniques that link policies and objectives. *(Fall)*

MGMT 3243. Employment Law. (3) Prerequisite: MGMT 3140. This course examines the legislation which impacts personnel/human resource management practices in union and non-union settings. Topics covered include fair employment practices, anti-discrimination law, representation elections, unfair labor practices, compensation and benefit legislation, privacy concerns and dispute settlement processes. (Same as ECON 3107.) *(Fall, Spring) (Evenings)*

MGMT 3244. Advanced Personnel/Human Resource Management. (3) Prerequisites: MGMT 3241; junior standing. Advanced topics in personnel/human resource management including strategic human resource planning, job analysis, human resource information systems, training, career development, and international personnel/human resource management. Case studies, projects and presentations are used to help students apply concepts and theories to current human resource issues. *(Spring)*

MGMT 3260. Managerial Communication. (3) Prerequisites: MGMT 3140, 3160, junior standing. An examination of the role of communication networks and strategies in managerial decision making. Emphasis on the role of communication skills in managing change, organizational conflict and corporate cultures. Cases will be used to apply the skills developed in MGMT 3140 and 3160 to analyze and address specific management problems. *(Spring)*

MGMT 3273. Small Business Management. (3) Prerequisites: OPER 3100, MKTG 3110, FINN 3120, MGMT 3140; junior standing. Consideration of opportunities and obstacles of starting and operating a small business. Emphasis will be on integrating all managerial requirements (financial, marketing, operation, legal, logistics, accounting and behavioral) of owning and operating a small business. Study of opportunities and assistance provided by franchises, federal, state and local agencies. Practice in solving problems gained through case analysis. *(Fall, Summer)*

MGMT 3274. International Business Processes and Problems. (3) Prerequisite: junior standing. An introduction to the process, institutions and problems associated with exporting, importing and management of multinational businesses. *(Fall)*

MGMT 3280. Business Policy. (3) Prerequisites: Senior standing and completion of ACCT 3136, ECON 3125, OPER 3100, MKTG 3110, FINN 3120, INFO 3130, BLAW 3150 and MGMT 3160. (Accounting majors are required to take OPER 3100, MKTG 3110, FINN 3120, INFO 3130, MGMT 3140, BLAW 3150, and either MGMT 3160 or COMM 1101.) Concerns the role of top management of the firm in integrating internal functions and environmental forces. Emphasis on defining economic, technological, ethical, political and social factors affecting the firm and their consideration in setting goals and operating policies. *(Fall, Spring, Summer) (Evenings)*

MGMT 3282. Business and Society. (3) Prerequisites: MKTG 3110, MGMT 3140, BLAW 3150. A study of the impact of management decisions on customers, employees, creditors, shareholders, community interests, ecology, and government (including taxes and the regulatory environment). The objective is to provide future managers with a systematic way of analyzing the impact of management decisions on larger society. *(Fall)*

MGMT 3283. Practicum in Small Business Planning. (3) Prerequisites: MGMT 3273; consent of Department chair. Designed for prospective small business owners pursuing the concentration in Small Business; others may be admitted on a space available basis. During the course, each student will work closely with a local small business owner to complete a plan designed to assist the owner in some phase of his/her firm. *(Spring)*

***MGMT 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op position. This course is restricted to majors in the Department of Management. Course evaluation is *Satisfactory/Unsatisfactory. (Spring, Summer, Fall)*

MGMT 3800. Directed Study. (1-6) Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

*Before applying for the co-op program, a major in the Department of Management must have completed 30 credit hours with a minimum overall GPA of 2.5. A transfer student must have completed 30 credit hour s with at least 15 hours at UNCC and a minimum GPA of 2.5 in UNCC courses. Before enrolling in MGMT 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.50 and the student's major coursework through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in MGMT 35000. These courses will be established by the co-op adviser and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.

Department of Management Information Systems and Operations Management

Chairperson: Associate Professor Cooper; *Professors:* Barnes, Conrad; *Associate Professors:* Hogue, Robbins; *Assistant Professors:* Bush, Bailey, Gorman, Jeffries, Repede, Saydam, Stylianou; *Adjunct Assistant Professor:* Gourdin; *Lecturer:* Lindsay

The Department of Management Information Systems and Operations Management enables students to study all phases of business operations and is particularly suitable for students who are (1) planning to operate their own businesses and are seeking a solid business foundation; (2) preparing for positions in large organizations where specialized skills are required; or (3) seeking a strong business background at the undergraduate level prior to undertaking graduate work.

A concentration in MIS would prepare the student to work in a company as (1) a consultant to corporate personnel who need to use the computer as a tool in their jobs, (2) a member of the management or staff who is virtually self-sufficient in his or her own computing needs, or (3) a computer programmer or systems analyst, if the student supplements the concentration with recommended electives.

A concentration in Operations Management focuses on the creation of outputs in manufacturing and service organizations. Students will learn technical and systems skills they will need to manage and improve operations in plants, banks, hospitals, and other firms. Typical tasks include designing jobs and systems, performing efficiency studies, scheduling people and materials, controlling materials, ensuring quality, and directing management of operations.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Students concentrating in Management Information Systems or Operations Management receive a Bachelor of Science in Business Administration degree with a major in Business Administration. The B.S.B.A. degree requires a minimum of 120 semester hours, including 45 hours of core courses within the College of Business Administration, 12 hours in the concentration, nine hours of mathematics and statistics, and completion of the University general education requirements. In addition to the nine hours of mathematics and statistics, at least 33 hours of coursework must be taken outside the College of Business Administration.

Courses which fulfill the College core and mathematics and statistics requirements are: ACCT 2121, 2122 and 3136; BLAW 3150; ECON 2101, 2102 and 3125; FINN 3120 or 1101; INFO 2130 and 3130; MGMT 3140, 3160 and 3280; MKTG 3110; OPER 3100; MATH 1100 or 1101 and 1102; and STAT 1220. A student must have a GPA of at least 2.0 for all academic work, with no more than one *D* in the hours required for the major. No course may be repeated more than twice.

MANAGEMENT INFORMATION SYSTEMS CONCENTRATION

The primary objective of the management information systems concentration is to prepare a student for a career in the information systems function of an organization. The curriculum is designed to provide both technological and managerial knowledge relevant to the development and use of computer-based information systems. Students concentrating in MIS must complete INFO 3233-Business Database Systems and INFO 3234-Business Information Systems Development. In addition, students will choose two courses from INFO 3235-Advanced Business Information Systems Development, INFO 3236-Business Decision Support Systems, INFO 3237-Information Center Functions, INFO 3238-Information Resource Management, INFO 3239-Advanced Office Automation, and ACCT 3132-Accounting Information Systems.

Students concentrating in MIS are encouraged to participate in the university cooperative education program. Substantial educational and employment opportunities are provided through the co-op experience.

OPERATIONS MANAGEMENT CONCENTRATION

The primary objective of the operations management concentration is to provide an understanding of technical and systematic approaches to designing business systems and solving business problems. Emphasis is on the development of good design and problem solving skills and the application of the powerful tools of the field. Students must complete any four of the following courses: OPER 3201-Advanced Operations Management, OPER 3202-Advanced Business Analysis, OPER 3203-Management Science, OPER 3204-Management of Service Operations, OPER 3205-Managing Project Operations, OPER 3206-Managing for Quality, OPER 3000-Topics in Operations Management, and any subsequently offered OPER 3200-level courses.

Progression Requirements. Students will not be admitted to a Department or concentration until they have attained junior standing and completed all of the following courses with a minimum GPA of 2.5: ACCT 2121 and 2122; ECON 2101 and 2102; ENGL 1101 and 1102; MATH 1100 and 1120; STAT 1220; and INFO 2130. Students may not enroll in any courses numbered 3000 or higher within the College until this progression requirement is met. Students are not permitted to repeat any 3000-level course more than twice.

SUGGESTED SCHEDULE: MANAGEMENT INFORMATION SYSTEMS CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1],[3]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V: (L)	3
GOAL V: (A)	3	Elective	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
STAT 1220[1]	3	GOAL VI: (X)	3
GOAL I: (W) (Outside Major)	3	INFO 2130[1]	3
GOAL VI: (C)	3	GOAL IV	4

Junior Year

FINN 3120	3	OPER 3100	3
MGMT 3140	3	BLAW 3150	3
MGMT 3160 (GOAL I: (W)	3	INFO 3130	3
ACCT 3136	3	MKTG 3110	4
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280[2]	3
INFO Concentration	9	INFO Concentration	3
Elective	3	Electives	6

SUGGESTED SCHEDULE: OPERATIONS MANAGEMENT CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1],[3]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V: (L)	3
GOAL V: (A)	3	Elective	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
STAT 1220[1]	3	GOAL VI: (X)	3
GOAL I: (W) (Outside Major)	3	INFO 2130[1]	3
GOAL VI: (C)	3	GOAL IV	4

Junior Year

FINN 3120	3	OPER 3100	3
MGMT 3140	3	BLAW 3150	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MKTG 3110	3
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280[2]	3
OPER Concentration	9	OPER Concentration	3
Elective	3	Electives	6

[1]Prerequisite for upper-division required business courses.
[2]To be taken after all 3000-level required business core courses have been filled.
[3]MATH 1141 (Differential and Integral Calculus I) may be substituted for MATH 1120. Students preparing for graduate studies are advised to take MATH 1141.

MANAGEMENT INFORMATION SYSTEMS (INFO) COURSE DESCRIPTIONS

INFO 2130. Introduction to Business Computing. (3) Prerequisites: MATH 1101 or equivalent; sophomore standing. Introduction of computer methods to solve business problems. Emphasis on understanding fundamental hardware and software concepts, selecting and using appropriate hardware and software needed for making various business decisions, and developing practical methods for using the computer to solve quantitative business problems. (May not be taken for upper-level credit in business, but may be taken for general University credit.) *(Fall, Spring Summer) (Evenings)*

INFO 3000. Topics in Management Information Systems. (3) Prerequisite: junior standing. Topics from the area of Management Information Systems. May be repeated for credit. *(On demand)*

INFO 3130. Management Information Systems. (3) Prerequisites: ECON 2101, 2102; ACCT 2121, 2122, INFO 2130; junior standing. A study of computer-based information systems, their development, management, control, and utilization to improve management decision making. Development of competence in the use of spreadsheet software and familiarity with database management systems software to enhance effectiveness in personal, analytical and decision making tasks. *(Fall, Spring, Summer) (Evenings)*

INFO 3131. Computer Information Systems. (3) Prerequisites: Permission of MBA Program Coordinator. Use of computers to solve business problems. Emphasis on understanding hardware and software concepts, using appropriate software to solve business problems, and understanding the impact of information systems on management decision making activities. Credit for INFO 3131 cannot be applied to satisfaction of any undergraduate degree requirements. *(Fall, Spring) (Evenings)*

INFO 3233. Business Database Systems. (3) Prerequisites: INFO 3130 or permission of the Department. A study of the effective management and utilization of organizational data resources in order to design and implement database management systems (DBMS) for business applications. Exploration of basic concepts of database systems and use of the computer to build and manipulate corporate databases. *(Fall, Spring)*

INFO 3234. Business Information Systems Development. (3) Prerequisites: INFO 3130, and MGMT 3140 or permission of the Department. Examination of the systems development process from the perspective of the systems analyst to provide an understanding of concepts, processes and techniques as they are applied to the systems development life cycle. Emphasis on the use of structured techniques to manage the complexities involved in the analysis phase of systems development. *(Fall, Spring)*

INFO 3235. Advanced Business Information Systems Development. (3) Prerequisites: INFO 3233, 3234; CSCI 2112. Development of business information systems. Emphasis on the development of computer applications as products of the systems development life cycle including the design and implementation phases of systems development, as accomplished through a major class project. *(Spring)*

INFO 3236. Business Decision Support Systems. (3) Prerequisites: INFO 3130, FINN 3120, MGMT 3140 or permission of the Department. A study of the application of the computer to middle and upper level management processes to provide computer skills needed to implement such applications. Reading, discussion, and hands-on computer projects. *(Fall)*

INFO 3237. Information Center Functions. (3) Prerequisites: INFO 3130, MGMT 3140 or permission of the Department. A study in the use of information center methods for building information systems in direct collaboration between users and analysts. Topics include fourth generation languages, end-user computing and prototyping. *(Spring)*

INFO 3238. Information Resource Management. (3) Prerequisites: INFO 3130, MGMT 3140 or permission of the Department. A study of information systems and the management of information in an organization to provide exposure to the decision challenges presented to the corporate manager by the rapid development of information technology and to suggest useful constructs for dealing with them. An integrated, interactive approach to decision making. *(Spring)*

INFO 3239. Advanced Office Automation. (3) Prerequisites: INFO 3130, MGMT 3140 and 3160. A study of the current and potential impact of computer automation on the operations and productivity of the business office. Topics will include identifying the need for and designing, planning and implementing system solutions in such areas as text preparation and dissemination, document storage and retrieval, telecommuting and teleconferencing, data communication networks, messaging and scheduling. *(Fall)*

***INFO 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op position. This course is restricted to majors in the Department of Management Information Systems and Operations Management. Course evaluation is Satisfactory/Unsatisfactory. *(Spring, Summer, Fall)*

INFO 3800. Directed Study. (1-6) Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

**Before applying for the co-op program, a major in the Department of MIS/Operations Management must have completed 30 hours with a minimum overall GPA of 2.5. A transfer student must have completed 30 credit hours with at least 15 hours of UNCC and a minimum GPA of 2.5 in UNCC courses. Before enrolling in INFO 3500 or OPER 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.5 and the student's major coursework through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in INFO 3500 or OPER 3500. These courses will be established by the co-op advisor and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.*

OPERATIONS MANAGEMENT (OPER) COURSE DESCRIPTIONS

OPER 3000. Topics in Operations Management. (3) Prerequisite: junior standing. Topics from the areas of Operations Management. The course may be repeated for credit. *(On demand)*

OPER 3100. Operations Management. (3) Prerequisites: MATH 1100 or 1101, 1120, STAT 1220; ECON 2101, 2102; ACCT 2121, 2122; junior standing. Introduction to and development of the management functions in manufacturing and non-manufacturing organizations. A systems approach to the organizational environment, the basic operating functions, the problems and decisions a manager encounters and the solution techniques and models with which he/she deals. Computer application will be included where appropriate. *(Fall, Spring, Summer) (Evenings)*

OPER 3201. Advanced Operations Management. (3) Prerequisite: OPER 3100. Cases and/or management simulations enable the student to apply the knowledge attained in Operations Management. The student, through an application forum, should develop in greater depth his/her understanding of the operating functions of an organization. *(Fall)*

OPER 3202. Advanced Business Analysis. (3) Prerequisite: OPER 3100. A study of more advanced probabilistic business problems with extensive use of canned computer programs and preparing system models. The course will center on the application of decision theory to business problems. *(Spring)*

OPER 3203. Management Science. (3) Prerequisite: Junior standing. An analytical approach toward understanding the management process and solving management problems with emphasis on existing models and developing insights for problem development and model building. *(Fall, Spring)*

OPER 3204. Management of Service Operations. (3) Prerequisites: OPER 3100. A study in solving problems and directing employees of service organizations. Topics include location, design, layout, queuing, capacity, scheduling, routing, change, management and quality control. *(Spring)*

OPER 3205. Managing Project Operations. (3) Prerequisites: OPER 3100. A study in the effective management of unique and short duration work activities (projects). Topics include planning, scheduling and controlling to meet costs, schedule and performance goals. *(On demand)*

OPER 3206. Managing for Quality. (3) Prerequisites: OPER 3100. A study of management philosophy, practices and analytical processes implemented in quality planning and administration of products and services. Topics include corporate culture, quality design, human factors and motivation, quality cost analyses and auditing, service quality, quality assurance, quality circles, and conformance to design. *(Fall)*

***OPER 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op pos ition. This course is restricted to majors in the Department of Management Information Systems and Operations Management. Course evaluation is Satisfactory/Unsatisfactory. *(Spring, Summer, Fall)*

OPER 3800. Directed Study. (1-6) Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

**Before applying for the co-op program, a major in the Department of MIS/Operations Management must have completed 30 hours with a minimum overall GPA of 2.5. A transfer student must have completed 30 credit hours with at least 15 hours of UNCC and a minimum GPA of 2.5 in UNCC courses. Before enrolling in INFO 3500 or OPER 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.5 and the student's major coursework through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in INFO 3500 or OPER 3500. These courses will be established by the co-op advisor and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.*

Department of Marketing

Chairperson: Associate Professor Weekly; *Professor:* Stevenson; *Associate Professors:* Paksoy, Swayne; *Assistant Professors:* Gourdin, McIntyre, Shao; *Lecturer:* Brewer

The Department of Marketing, an integral part of the curriculum of the College of Business Administration, offers a curriculum suitable for students who are (1) planning to operate their own businesses and are seeking a solid business foundation, (2) preparing for positions in large organizations where specialized skills are required and (3) seeking a strong background at the undergraduate level prior to undertaking graduate work.

The study of marketing provides students with an opportunity to prepare for careers in marketing management, sales, advertising, marketing research, retailing, logistics and transportation, and international marketing.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Students concentrating in Marketing receive a Bachelor of Science in Business Administration degree with a major in Business Administration. The B.S.B.A. degree requires a minimum of 120 semester hours, including 45 hours of core courses within the College of Business Administration, 12 hours in the marketing concentration, nine hours of mathematics and statistics, and completion of the University general education requirements. In addition to the nine hours of mathematics and statistics, at least 33 hours of coursework must be taken outside the College of Business Administration.

Courses which fulfill the College core and mathematics and statistics requirements are: ACCT 2121, 2122 and 3136; BLAW 3150; ECON 2101, 2102 and 3125; FINN 3120; INFO 2130 and 3130; MGMT 3140, 3160 and 3280; MKTG 3110; OPER 3100; MATH 1100 and 1120; and STAT 1220. A student must have a GPA of at least 2.0 for all academic work, with no more than one *D* in the hours required for the major. No course may be repeated more than twice.

MARKETING CONCENTRATION

Students concentrating in marketing must complete MKTG 3110-Marketing Concepts plus an additional 12 hours from the following courses: MKTG 3210-Marketing Research and Analysis, MKTG 3211-Advertising Management, MKTG 3212-Retailing Management, MKTG 3213-Personal Selling and Sales Management, MKTG 3215-International Marketing, MKTG 3216-Consumer Behavior, MKTG 3217-Logistics and Transportation, and MKTG 3219-Marketing Strategy.

Progression Requirements. Students will not be admitted to a Department or concentration until they have attained junior standing and completed all of the following courses with a minimum

GPA of 2.5: ACCT 2121 and 2122; ECON 2101 and 2102; ENGL 1101 and 1102; MATH 1100 or 1101 and 1120; STAT 1220; and INFO 2130. Students may not enroll in any courses numbered 3000 or higher within the College until this progression requirement is met. Students are not permitted to repeat any 3000-level course more than twice.

SUGGESTED SCHEDULE: MARKETING CONCENTRATION

Freshman Year

ENGL 1101[1]	3	ENGL 1102[1]	3
MATH 1100 or 1101[1]	3	MATH 1120[1]	3
GOAL IV	4	GOAL IV	4
GOAL III	3	GOAL V: (L)	3
GOAL V: (A)	3	Elective	3

Sophomore Year

ACCT 2121[1]	3	ACCT 2122[1]	3
ECON 2101[1]	3	ECON 2102[1]	3
MATH 1220[1]	3	GOAL VI: (X)	3
GOAL I: (W) (Outside major)	3	INFO 2130[1]	3
GOAL VI: (C)	3	GOAL IV	4

Junior Year

MKTG 3110	3	OPER 3100	3
BLAW 3150	3	FINN 3120	3
MGMT 3160 (GOAL I: W)	3	INFO 3130	3
ACCT 3136	3	MGMT 3140	3
Elective	3	Elective	3

Senior Year

ECON 3125	3	MGMT 3280[2]	3
MKTG Concentration	9	MKTG Concentration	3
Elective	3	Electives	6

[1]Prerequisite for upper-division required business courses.
[2]To be taken after all 3000-level required business core courses have been completed.

MARKETING (MKTG) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates

MKTG 3000. Topics in Marketing. (3) Prerequisite: junior standing. Topics from the area of marketing. This course may be repeated for credit. *(On demand)*

MKTG 3110. Marketing Concepts. (3) Prerequisites: ECON 2101, 2102; ACCT 2121, 2122; junior standing. Introduction to the marketing concept and the various aspects of marketing and its interface with the external environment and other functional areas of the organization. Emphasizes developing breadth in the subject and providing a foundation for further study in marketing. *(Fall, Spring, Summer) (Evenings)*

MKTG 3210. Marketing Research and Analysis. (3) Prerequisite: MKTG 3110. A research course which provides the student with an understanding of marketing research and its usefulness in the organization. Deals with scientific marketing research methods with emphasis on collection, analysis and interpretation of data as applied to the solution of marketing problems. *(Fall) (Evenings)*

MKTG 3211. Advertising Management. (3) Prerequisite: MKTG 3110. Covers all areas of marketing promotion, including such topics as advertising, media selection, packaging and forms of sales promotion. Offers basic skills and techniques to allow the student to enter careers in advertising or media. *(Spring)*

MKTG 3212. Retailing Management. (3) Prerequisite: MKTG 3110. Presents retailing as a part of the marketing distribution phase of a total interacting marketing system. Key concepts covered include consumer and market analysis, store location, store layout, merchandising, pricing and promotional issues and problems. Also considers legal and environmental implications. Emphasis on application of class concepts through case analysis and class discussion. *(Fall) (Evenings)*

MKTG 3213. Personal Selling and Sales Management. (3) Prerequisite: MKTG 3110. An overview of the skills and knowledge involved in individual selling and the management of sales programs. Emphasis on sales and sales management theories and their applications. *(Spring)*

MKTG 3215. International Marketing Management. (3) Prerequisites: MKTG 3110. Study of the marketing practices and analytical processes in international marketing operations, including strategic planning and organizing for international marketing, international pricing, promotion and distribution practices, and researching global markets.

MKTG 3216. Consumer Behavior. (3) Prerequisite: MKTG 3110. Examination of the consumer decision-making process including searching for, purchasing, using, evaluating and disposing of products and services. Emphasis on how marketing mix, social-cultural factors, inner-characteristics and lifestyle affect consumer behavior. Discussion of current examples, cases and public policy issues. *(Fall, Spring)*

MKTG 3217. Logistics and Transportation. (3) Prerequisite: MKTG 3110, OPER 3100. Examines logistics theory, concepts, and practices as applied to the business organization. Elements of the logistics system (e.g. inventory, warehousing, materials handling, packaging, and transportation) are considered singly and as parts of a larger, interactive system. The transportation function will be singled out for a more in-depth study. Emphasis is on relationships and interfaces which must be recognized in the design and management of logistics systems.

MKTG 3218. Export Marketing and Logistics. (3) Prerequisite: MKTG 3110. Study of exporting strategies and practices, including identification of export markets, development of distribution channels, and exporting logistics, documentation, and financing. Examination of U.S. international trade patterns and trends to include governmental export policies. *(Spring)*

MKTG 3219. Marketing Strategy. (3) Prerequisites: MKTG 3110 and senior standing. Integration of all marketing elements in a strategic planning framework. Emphasis on areas of strategic importance, especially those which have significant implications and relevance for marketing policy decisions in competitive situations. *(Spring)*

***MKTG 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op position. This course is restricted to majors in the Department of Marketing. Course evaluation is *Satisfactory/Unsatisfactory*. *(Spring, Summer, Fall)*

MKTG 3800. Directed Study. (1-6) Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

**Before applying for the co-op program, a major in the Department of Marketing must have completed 30 credit hours with a minimum overall GPA of 2.6. A transfer student must have completed 30 credit hours with at least 15 hours at UNCC and a minimum GPA of 2.5 in UNCC courses. Before enrolling in MKTG 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.50 and the student's major coursework through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in MKTG 3500. These courses will be established by the co-op adviser and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.*

College of Education and Allied Professions

Dean: Professor Heller; *Executive Assistant to the Dean:* Clinical Associate Professor Anderson; *Assistant to the Dean for Student Services:* Adjunct Assistant Professor Gwaltney; *Assistant to the Dean for Quality Assurance:* Adjunct Assistant Professor Clay

The College of Education and Allied Professions is composed of the Departments of Curriculum and Instruction, Educational Administration, Health and Physical Education, Human Services, Teaching Specialties, and Aerospace Studies (Air Force ROTC). An Army ROTC program in Military Science is also part of the College. The Bachelor of Arts degree is offered in the Departments of Curriculum and Instruction, Teaching Specialties and Human Services.

Undergraduate Programs. The Department of Curriculum and Instruction offers a program for the preparation of elementary and middle grades teachers and the professional sequence leading to certification for students who major in an academic area and plan to teach at the secondary level. The Department of Teaching Specialties offers a program in Special Education for the preparation of special education teachers. A program leading to certification in English as a Second Language is also available. The Department of Human Services offers programs for the preparation of child and family development specialists, program directors for community agencies, infant and day care coordinators, human services specialists and other related personnel for a variety of human service professions.

Both the Department of Aerospace Studies and the Military Science program are organized to provide academic instruction and a pre-professional training program in accordance with the regulations of their respective military branches and the rules and regulations of The University. Students can gain academic experience in national defense issues, programs and policy and develop military leadership skills regardless of their professional intent. Successful completion of either program will prepare those who choose to pursue a career as a military officer to serve as a commissioned officer in the respective branch of service. All students in these programs pursue majors in one or more of the degree programs offered by the University or one of the institutions of higher education in the Charlotte Area Educational Consortium.

In addition, the College has the capacity to offer basic study in the field of library science. The courses listed in the *Catalog* are offered when there is documented need and demand.

SERVICES AND SPECIALIZED RESOURCES

Curriculum and Instructional Materials Center. Located in the Atkins Library, the Center provides a laboratory for students and faculty to study and experiment with curriculum and instructional materials and methods. Included in the Center are over 2,500 elementary and secondary textbooks, a file of standardized tests, several hundred educational games and simulations, a collection of professional education books, pamphlets and periodicals, curriculum guides from school systems throughout the country, and numerous other resources for the teacher education professions.

Educational Media and Technology Laboratory. The College of Education and Allied Professions provides a variety of courses and laboratory experiences to prepare students to effectively use contemporary communications media and technology. Students receive instruction and hands-on experiences in using instructional design, photography, display techniques, overhead transparencies, motion pictures, microcomputers, interactive instruction, television and other media to enhance teaching and communication skills. The Laboratory houses microcomputers, printers, an interactive video instructional system, and a variety of educational applications software. The Laboratory is equipped for black and white film development and processing, production of overhead transparencies, video tape production and viewing, dry mounting and laminating of educational materials, and educational slide copying and editing.

Scottish Rite Clinic for Childhood Learning and Language Disorders. The clinic, a collaborative effort between the College and the Scottish Rite, provides direct diagnostic and therapeutic services to children with language and learning handicaps. Counseling and related services are provided to parents as supplementary clinic services. The clinic provides diagnostic assessment, intervention (treatment) and follow-up services primarily to children between the ages of three and eight years old.

The clinic has a major programmatic relationship with the special education program in the Department of Teaching Specialties and interrelationships with a variety of other programs on campus concerned with serving children and parents. Referrals are open to the public. There are no fees for the services provided. The Scottish Rite Clinic is located in Colvard, Rm. 1051.

Atkins Library and Media Services. The University Library maintains an extensive collection of professional education books, periodicals and reserve documents representing all subject areas and grade levels. It subscribes to approximately 500 education-related periodicals and maintains a vertical file containing non-catalogued education materials. The Library is a government documents depository.

Media Services provides students and faculty with audiovisual teaching and learning resources. An extensive collection of audiovisual equipment, 800 motion picture films, and graphic and television production services are available for students and faculty. Instruction is provided in the preparation and use of audiovisual media and equipment.

Teacher Placement. The Center for Student Employment and Career Services, in cooperation with the College of Education and Allied Professions, provides placement services for qualified graduates. All students in educational programs are urged to file their credentials in the Center. This service provides a quick and convenient means for requesting and mailing credentials to prospective employers. Many prospective employers use the Center to announce and recruit for their openings.

NORTH CAROLINA TEACHER CERTIFICATION

Undergraduate. North Carolina provides for teacher certification based upon the completion of approved baccalaureate degree programs in Elementary (kindergarten through sixth grade), Middle Grades (grades six through nine), Secondary (grades nine through 12) and Special Education, Mental Handicaps. Students selecting Elementary Education, Special Education and Middle Grades Certification major in Education and complete a second academic concentration from a list of approved options. Students who select Secondary Certification major in academic disciplines within the College of Arts and Sciences. North Carolina also provides special subjects certification (kindergarten through grades 12) in certain teaching fields such as art and dance. Students seeking certification in art or dance major in the appropriate area in the College of Arts and Sciences.

Department of Curriculum and Instruction

Chairperson: Professor Lock; *Assistant Chairperson:* Professor H. Jaus;
Professors: Britt, Schaffer; *Associate Professors:* Conwell, Green, Gretes, Hoyle, Mork;
Assistant Professors: Passe, Piel, Reif, Yon; *Clinical Assistant Professor:* Baucom;
Adjunct Professor: Hanes; *Adjunct Assistant Professors:* Hickman, Longnecker;
Lecturers: Frazier, Harrison, V. Jaus, Sides, M. Spooner

The Department of Curriculum and Instruction offers programs leading to the Bachelor of Arts and the Master of Education degrees with undergraduate and graduate teaching certification. Coursework leading to teacher certification at the secondary level is offered for students majoring in programs offered by the College of Arts and Sciences. The Certificate of Advanced Study (sixth year) is offered in five areas. (See pages 348-352 regarding the graduate programs.)

More than ever, the teaching profession offers college graduates exciting opportunities and challenges. The undergraduate teacher education programs offered by the Department provide the first crucial step in career development to become teachers in grades K-Elementary, 6-9 (middle grades) or 9-12 (secondary). For each type of certification, the Department offers coursework and clinical experiences to prepare students to identify learner needs, design curricula, develop instructional materials, and use effective teaching practices.

Students receiving certification in grades K-6, 6-9, and K-12 receive the Bachelor of Arts degree with a major in education or an appropriate discipline in Arts and Sciences. Students preparing for secondary (grades 9-12) certification must major in a discipline in Arts and Sciences and complete certification requirements in the Department of Curriculum and Instruction.

Students majoring in Elementary Education and Middle Grades are required to complete a second academic concentration. Students should select the second concentration in consultation with their academic adviser during their second semester. Second concentrations considered complementary to Elementary Education and Middle Grades are American Studies, Anthropology, Chemistry, English, Foreign Languages (French, German, Spanish), History, Philosophy, Political Science and Sociology. Students seeking middle grades certification are required to choose two areas of concentration from communications studies, mathematics, social studies or science.

BACHELOR OF ARTS

Each program leading to the B.A. degree in Education includes the following requirements:

I. General Studies Component
The general education component meets general education requirements of The University and is intended to provide a foundation for preparation in the student's area of specialization, to support the professional studies component, and to provide the student with the knowledge and skills generally needed by educated persons. This foundation is designed to include exposure to science, mathematics, creative arts, English, history and the social sciences, and health, physical education and safety.

II. Professional Education Component
The purpose of the professional education component is to provide the general professional competencies required of all teachers. This component provides for the development of knowledge and skill in understanding the role of the teacher and of education in our society, planning for instruction, classroom management, and the evaluation of pupil progress and instruction.

III. Areas of Specialization Component
The specialization component is intended to provide the prospective teacher with the skills and knowledge uniquely applicable to the particular level of certification sought. Each of the three specializations (K-6, 6-9, 9-12) is differentiated in terms of the developmental stages of the children with whom the prospective teacher will be working as well as the knowledge of content that would qualify the teacher to provide instruction at those levels.

THE PROFESSIONAL EDUCATION SEQUENCE

Admission. Students should obtain an application for formal admission to the teacher education program in the Department of Curriculum and Instruction before the end of the sophomore year. To be admitted to the professional education program the student must meet the following criteria:

1. An overall GPA of 2.5 and a minimum of 30 semester hours;
2. A grade of *C* or better in EDUC 2100;
3. Approval signatures from adviser(s) and department chairperson;
4. Acceptable scores on Core I and II of the National Teacher Examination (NTE).

Junior Year Transfer and Irregular Certification. Students should follow the procedures outlined above and apply for admission to the professional education sequence during their first semester of enrollment at UNC Charlotte.

Retention in Professional Education Sequence. Retention in the teacher education program is contingent upon the student's maintenance of the following criteria:

1. A GPA of 2.75 or better in professional education courses and a GPA of 2.75 in the area of teaching specialization.
2. A grade of *C* or better in all professional education courses and the area of teaching specialization.
3. An overall GPA of 2.5 or above.

REQUIREMENTS FOR CERTIFICATION PROGRAMS

Elementary Education. This program is designed for students who intend to become teachers at the elementary school level by seeking certification in Elementary Education (K-6). Degree requirements include completion of professional studies, an area of teaching specialization, a second concentration and general studies requirements.

Middle Grades Education. This program is designed for students who intend to become teachers at the sixth through the ninth grade levels and seek middle grades certification in two of the following areas of concentration: communication skills, mathematics, science, social studies. Degree requirements for students majoring in education include general studies; professional studies, teaching specialization and two concentrations. Students majoring in a discipline in Arts and Sciences must complete these requirements and satisfy the requirements for their major.

Secondary Education. This sequence of coursework is designed for students in the College of Arts and Sciences who intend to become teachers at the ninth through twelfth grade levels and seek certification in an academic field. In addition to the major teaching field requirements, certification requirements include professional studies and coursework in the secondary specialization.

ADMISSION TO STUDENT TEACHING

Following are criteria for admission to student teaching. A student must have:

1. The recommendation of his/her advisers.
2. Completed prerequisite general studies, professional studies, and area of teaching specialization requirements.
3. A GPA of 2.75 or above in the area of teaching specialization.
4. A GPA of 2.75 or above in the professional studies sequence.
5. An overall GPA of 2.5 or above.
6. Senior status with grades of *C* or above in all courses required for certification.

SUGGESTED SCHEDULE: ELEMENTARY EDUCATION PROGRAM (K-6 CERTIFICATION)

First Semester

ENGL 1101 (GOAL I) 3
BIOL 1110 + L (GOAL IV) 4
Concentration 3
POLS 1110 3
Foreign Language (GOAL I) 4

Second Semester

ENGL 1102 (GOAL I) 3
ESCI 1101 + L (GOAL IV) 4
HIST 1160 or 1161 (GOAL VI: C) 3
Foreign Language (GOAL I) 4
SOCY 1101 (GOAL III) 3

Third Semester

PSYC 2109 3
MUSC 1132 (GOAL V: A) 3
MAED 2101 (GOAL II) 4
EDUC 2100 (GOAL VI: C) 3

Fourth Semester

EDUC 2150 (GOAL VI: C) 3
†Creative Arts 3
MAED 2102 (GOAL II) 4
HIST 1100, 1120 or 1121 (GOAL VI: X) 3

Fifth Semester

CHFD 3115 3
Concentration 3
PHYS 1121 (GOAL IV) 4
EDUC 3120 4
MAED 2103 3

Sixth Semester

HPED 3233 3
READ 3151 (GOAL I: W) 3
EDUC 3151 + L 4
ENGL 3103 or 3104 (GOAL V: L) 3
EDUC 3150 + L 4

Seventh Semester

HLED 3101 3
EDUC 3152 + L (GOAL I: W) 4
NC History (HIST 3295 or 3296) 3
ECON 5102, 1100 or 2101 3
*Concentration 6

Eighth Semester

EDUC 3470 (Student Teaching) 12

†See adviser for a listing of Creative Arts courses.
*Courses to meet second concentration requirement.

SUGGESTED SCHEDULE MIDDLE GRADES (6-9 CERTIFICATION)

First Semester

ENGL 1101 (GOAL I) 3
BIOL 1110 + L (GOAL IV).....4
HIST 1160 or 1161 (GOAL VI: C) 3
MATH 1103 (GOAL II).....3
POLS 1110 3

Second Semester

ENGL 1102 (GOAL I) 3
ESCI 1101 + L (GOAL IV) 4
*Creative Arts (GOAL V: A) 3
STAT 1222 (GOAL II) 3
GEOG 1101 (GOAL VI: X).....3

Third Semester

PSYC 1101 + L (GOAL IV) 4
EDUC 2100.....3
Concentration I (GOAL I: W) 12

Fourth Semester

PSYC 2109 3
HLED 2200.....3
COMM 1101 or EDUC 1110.....3
Concentration I or II (GOAL III) 9

Fifth Semester

EDUC 3185 + L.....4
EDUC 2110.....3
SPED 3160 3
Concentration I or II (GOAL V: L).....6-9

Sixth Semester

EDUC 3186 + L 4
EDUC 3120.....3
Concentration I-II 9-12

Seventh Semester

READ 5250 (GOAL I: W).....3
Concentration I or II
(including Methods).....15

Eighth Semester

EDUC 3480 (Student Teaching) 12

Students seeking Secondary Certification (9-12) should see their Arts and Sciences adviser for programs.

*See adviser for a listing of Creative Arts courses.

EDUCATION (EDUC) COURSE DESCRIPTIONS

Courses for Undergraduates

EDUC 1110. Communication Skills and Processes. (3) Communication theory; analysis and application of inter- and intra-personal communications strategies. *(Fall, Spring) (Evenings)*

EDUC 1140. Learning Skills Instruction: Theory, Practice and Application. (3) Development of both knowledge of and performance in the learning skills necessary for successful academic performance. Emphasis on learning principles and other factors important in skills development; motivation and goal setting; application of skills in academic settings. *(Fall, Spring)*

EDUC 2100. Introduction to Education. (C) (3) Comprehensive introduction to the profession of teaching which surveys the social, historical, and philosophical foundations of the educating professions, the organization and various levels of education, and the major issues in American education. *(Fall, Spring, Summer) (Evenings)*

EDUC 2110. Instructional Design and Evaluation. (3) Prerequisite: sophomore status. Corequisites: EDUC 2100 and PSYC 2109. Setting goals and objectives for instruction, planning activities and evaluation based on objectives with emphasis on writing cognitive, social, affective, and psychomotor objectives using an accepted system, and developing teacher made and other types of classroom tests. *(Fall, Spring, Summer) (Evenings)*

EDUC 2150. Human Development Across the Life Span. (C) (3) Biological, psychological and social development throughout the life span. *(Fall, Spring, Summer) (Evenings)*

Courses for Students Admitted to Teacher Education

EDUC 3120. Analysis of Teaching and Research. (3) Prerequisites: EDUC 2100 and 2110, PSYC 2109, and junior status. Practices that conceptualize, measure and improve classroom performance and management with emphasis on various organizational patterns and practices, different approaches to instruction and their impact on student learning, and adapting and evaluating teacher behavior in specific contexts and grade levels. Concrete instruments for evaluation of on-site observations of school programs will be used. *(Fall, Spring) (Evenings)*

EDUC 3150. Science in the Elementary School. (4) Prerequisites: BIOL 1110 and ESCI 1101. Corequisite: PHYS 1121 and junior status. Methods course for orientation to teaching strategies and materials appropriate for teaching science in grades K-6. Emphasis on using science content to develop effective science learning experiences for elementary school children. Field experience included as a one-hour lab. *(Fall, Spring)*

EDUC 3151. Language Arts in the Elementary School. (4) Prerequisites: ENGL 1101, 1102. Corequisites: READ 3151; ENGL 3103 or 3104. Methods course for orientation to the teaching of Language Arts in grades K-6. Emphasis on methods for teaching English grammar, spelling, writing, listening, and speaking. Field experience included as a one-hour lab. *(Fall, Spring)*

EDUC 3152. Social Studies in the Elementary School. (W) (4) Prerequisites: 12 hours of social science and history; junior status. Corequisites: N.C. History and ECON 5102. Methods course for orientation to teaching strategies and materials for teaching social studies in grades K-6. Emphasis on using social science content to develop effective social studies instruction for elementary school children. Field experience included as one-hour lab. *(Fall, Spring)*

EDUC 3182. Methods and Management for Teaching Social Studies. (3) Preparation to teach social studies at the middle grades and secondary levels. Emphasis on teaching concepts from history and the social sciences. *(Fall, Spring)*

EDUC 3185. Middle Grades Education. (3) Prerequisite: junior status. Corequisite: EDUC 3185L. Comprehensive overview of education in the middle grades (6-9) with emphasis on the foundational components, organizational patterns, instructional programs and management techniques unique to the middle grades. *(Fall)*

EDUC 3185L. Middle Grades Teaching Laboratory. (1) Prerequisite: junior status. Corequisite: EDUC 3185. Participation in middle grades instructional settings. *(Fall)*

EDUC 3186. Middle Grades Children. (3) Prerequisites: PSYC 2109, EDUC 2100, junior status. Physical, social, cognitive and affective developmental factors which influence growth and achievement of 11 to 14-year-old students in grades 6-9. *(Spring)*

EDUC 3195. Secondary Education. (3) Prerequisites: EDUC 2100 and 2110; junior status. Comprehensive overview of secondary education with emphasis on the foundational components, instructional programs, and management techniques unique to grades 9-12. *(Fall, Spring)*

EDUC 3196. Secondary School Students. (3) Prerequisites: PSYC 2109, EDUC 2100, junior status. Physical, social, cognitive and affective developmental factors which influence growth and achievement of 14- to 18-year-old students in grades 9-12. *(Fall, Spring)*

EDUC 3460. Student Teaching Grades K-12. (12)

EDUC 3470. Student Teaching Grades K-6. (12)

EDUC 3480. Student Teaching Grades 6-9. (12)

EDUC 3490. Student Teaching Grades 9-12. (12)

Student Teaching Courses. Prerequisites: approved application for student teaching; completion of general studies, professional studies, and specialization requirements; a GPA of 2.75 in major, 2.75 in professional studies, and 2.5 overall. Grade of *C* or better in all professional education courses. Program of experiential learning activities in the student's area of teaching specialization conducted in an approved school setting under the supervision and coordination of University faculty and school personnel. Emphasis on development of competencies in the areas of planning, evaluating, instructing, managing instruction, providing the learning environment, and professionalism, and in examination of strategies for developing a personal teaching/learning style. Opportunities to demonstrate the above skills are provided in appropriate grade level settings. *(Fall, Spring)*

EDUC 3800. Individual Study in Education. (1-6) Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

EDUC 4135. Audiovisual Communications. (3) (3G) Prerequisite: junior standing or departmental approval. An overview of traditional and emerging audiovisual media for education, training, marketing, and public relations. Emphasis on knowledge and skills for evaluating, designing, producing, and using media such as photography, television, displays, interactive video, and microcomputers to enhance communication. *(Fall, Spring)*

EDUC 4140. Educational Television. (3) (3G) Prerequisite: junior standing or departmental approval. An examination of traditional and emerging applications of telecommunications media for teaching, training and informing. Investigation of published research and current strategies for evaluating the social and educational impact of television. Students will evaluate, design, produce, and utilize telecommunications media in micro-teaching settings, for the enhancement of communication in their respective disciplines. *(On Demand)*

Advanced undergraduates may take 5000-level education courses for undergraduate credit. For complete course descriptions see page 350.

Department of Health and Physical Education

Chairperson: Professor Murphy; *Professor:* Berne; *Associate Professors:* Bostian, Healey; *Assistant Professors:* Boyce, Fortune, Jackson, Manning, Slater; *Lecturers:* Avant, Debate, Fielding, Kohn, Nave

A primary objective of the Department of Health and Physical Education is optimal functioning of individuals based on knowledge and skills supported by evidence resulting from scientific inquiry. The Department offers a broad range of games, exercise, sports and lecture/laboratory courses to facilitate meeting this objective.

The Athletic Training curriculum enables students to prepare to become athletic trainers. Students who earn certification may find career opportunities in a number of settings including schools, colleges, medical clinics, professional sports teams and commercial health promotion agencies.

The Perceptual Motor curriculum provides an opportunity for students to learn the science and art of perceptual motor development in children, how perceptual motor development deficits may impair classroom and social functioning, and interventions and strategies for prevention of and therapy for perceptual motor deficits. Emphasis is on functioning in the classroom.

ATHLETIC TRAINING CURRICULUM

The Athletic Training Curriculum is a 30-credit hour concentration in the prevention and treatment of athletic injuries. The emphases of the curriculum are emergency medical care in the absence of medical personnel, taping techniques, recognition of injuries, and the methods and modalities of injury rehabilitation under the guidance of physicians. Students are given opportunities to gain knowledge and skills basic to passing the written and clinical exams of the National Athletic Trainers Association (NATA), and the hours supervised by certified athletic trainers and physicians in both credit and non-credit clinical apprenticeships count toward the 1,500 clinical hours required for eligibility to take the certification examinations given at central sites by NATA. Recommended courses are CHEM 1103 and 1103L; BIOL 2273, 2273L, 2274 and 2274L; PHED 2284, 2290, 3251, 3290, 3291; and HLED 2101.

HEALTH EDUCATION (HLED) COURSE DESCRIPTIONS

Students who desire more information about the courses may review course outlines in the Department of Health and Physical Education.

HLED 2101. Healthy Lifestyles. (3) A health survey course with emphasis on health behavior, decision making and knowledge. *(Fall, Spring, Summer)*

HLED 2200. Secondary School (Grades 6-12) Health, Physical Education and Safety. (3) Prerequisite or corequisite: EDUC 2100. Provides the preservice teacher with the curricular content of health, physical education and safety in grades 6-12. Focuses on the value of knowledge, positive attitudes, skills development and lifestyle related to health, physical education and safety. *(Fall, Spring, Summer)*

HLED 3101. Health Education in the Elementary School. (3) Prerequisites: junior standing and EDUC 2100, 2110 and 2150. A methods course designed for the elementary specialist as an orientation to content, curriculum and methods appropriate for teaching health education in grades K-6. *(Fall, Spring, Summer)*

PHYSICAL EDUCATION (PHED)

Students who desire more information about the courses may review course outlines in the Department of Health and Physical Education.

Courses for Undergraduates

PHED 1201. Foundations of Physical Conditioning. (1) The application and basic science of physical training programs designed to improve and maintain physical fitness. *(Fall, Spring)*

PHED 1202. Weight Training. (1) Mechanics and programming of weight training. *(Fall, Spring, Summer)*

PHED 1203. Fencing. (1) The skills and rules of the sport of fencing. *(Spring)*

PHED 1204. Aerobic Dance. (1) Exercise sequences and dance patterns performed to music and designed to improve general physical fitness. *(Fall, Spring)*

PHED 1206. Adaptive and Developmental Physical Education. (1) Prerequisite: permission of the instructor. Prescribed ameliorative exercises adapted to individual needs, capacities and interests. Primarily designed for the individual with anatomical and functional defects. *(Fall, Spring)*

PHED 1210. Beginning Swimming. (1) For weak swimmers or nonswimmers. Instruction in water safety fundamentals, basic body positioning, maneuvering in water, and traveling skills, including basic strokes. *(Fall, Spring)*

PHED 1211. Intermediate Swimming. (1) Emphasis on gaining competency in at least four basic strokes and increasing endurance. *(Fall, Spring)*

PHED 1220. Beginning Tennis. (1) The rules, basic skills and strategy. *(Fall)*

PHED 1222. Racquet Sports. (1) Basic skills, tactics, safety and rules of racquetball, court and table tennis, squash and badminton. *(Fall, Spring)*

PHED 1223. Beginning Badminton. (1) The rules, basic skills and strategy. *(Fall)*

PHED 1240. Beginning Golf. (1) The grip, stance, stroke, use and selection of clubs, rules and etiquette. *(Fall, Spring)*

PHED 1242. Archery. (1) The fundamental skills and selection, care and repair of equipment. *(Fall)*

PHED 1250. Volleyball. (1) The rules, fundamental skills and strategies. *(Fall, Spring)*

PHED 2210. Exercise, Weight Control and Nutrition Roles in Planning and Practicing Physical Fitness. (3) Study of the roles of exercise, weight control and nutrition in planning and practicing physical fitness in contemporary society. *(Yearly)*

PHED 2122. Lifeguarding. (2) The knowledge and skills associated with lifeguarding. Qualifying students will receive the American Red Cross Lifeguarding Certificate. *(Spring)*

PHED 2213. Water Safety Instruction. (3) Prerequisite: current American Red Cross Advanced Lifesaving Certification. Techniques used in teaching people aquatic skills. Qualifying students will receive the American Red Cross Water Safety Instructor's rating. *(Spring)*

PHED 2219. Scuba Diving. (3) Prerequisite: appropriate swimming ability relative to current SCUBA standards as prescribed by recognized SCUBA certifying bodies. The science and skills associated with the use of self-contained underwater breathing apparatus. Students who demonstrate the required qualities may request certification as an open water SCUBA diver. *(Fall, Spring, Summer)*

PHED 2220. Advanced Scuba Diving. (1) Prerequisite: Certified Open Water Diver or certification as a Basic SCUBA Diver with a minimum of 10 logged dives. The knowledge and skill required for underwater navigation, search and recovery, limited visibility diving and deep diving. The student will be required to go on two weekend-long open water dives. Advanced Open Water Diver Certification will be granted to students who qualify. *(Fall, Spring)*

PHED 2230. Wilderness Experience. (3) An introduction to wilderness pursuits with a focus on high level wellness, environmental appreciation and group dynamics. Backpacking and skills to conduct wilderness trips; introduction to rock climbing. Field experiences during class and two weekend trips. *(Fall)*

PHED 2251. Introduction to Human Movement: A Personal Approach. (3) Selected methods of observing and analyzing human movement via self-observation and study. *(Fall)*

PHED 2280. Foundations of Exercise Science. (3) The science foundations of programming exercise for health fitness. *(Fall)*

PHED 2290. Emergency Medical Care. (3) Knowledge and techniques for administering prompt and appropriate first aid and/or emergency medical care in situations where the services of qualified medical personnel are not available or are delayed. *(Fall, Spring, Summer)*

PHED 3099. Movement Problems/Topics. (1-6) Prerequisite: consent of instructor. Movement problems/topics chosen by the student which relate to special areas of interest. May be repeated for credit with approval of instructor. *(Fall, Spring, Summer)*

PHED 3200. Special Physical Education for the Mentally Handicapped Child. (3) Prerequisite: SPED 3160 and admission to teacher education program. Study of movement potentials and limitations of mentally handicapped children and teaching skills necessary to use movement as a medium for physical, social and emotional development. *(On demand)*

PHED 3233. Movement Experiences for Elementary School Children. (3) Prerequisites: EDUC 2100, 2110 and 2150. Study of movement and physical activities as applied in the elementary school program. *(Fall, Spring, Summer)*

PHED 3251. Human Movement. (3) Prerequisite: PHED 2251 or permission of instructor. Analysis and application of basic movement in specific sport, dance, gymnastic and aquatic skills. *(Spring)*

PHED 3284. Sports Injury Prevention and Management. (3) Prerequisites: PHED 2290 or consent of instructor. The study and practice of modern principles of the prevention and management of sports injuries. *(Fall)*

PHED 3285. Conditioning for Maximum Sports Performance. (3) Prerequisite: PHED 2290 or consent of instructor. A study of biomechanical and physiological principles of conditioning for maximum sports performance. Two lecture and three laboratory hours each week. *(On demand)*

PHED 3290. Anatomical Structures and Athletic Injuries. (3) Prerequisites: BIOL 2273, 2273L, 2274 and 2274L; PHED 2290 and 3284. Anatomical structures and their relationship to the prevention and treatment of athletic injuries. *(On demand)*

PHED 3291. Therapeutic Modalities. (3) Prerequisite: PHED 3290. Methods and techniques of the application of selected therapeutic modalities and the evaluation of injuries relative to modalities. *(On demand)*

PHED 3292. Athletic Training Clinical. (3) Prerequisite: PHED 3290. Study and treatment of actual athletic injuries under the guidance of physicians and certified trainers. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required fo students receiving graduate credit.

PHED 4204. Perceptual Motor Development. (3) (3G) Theories, principles and research related to perceptual-motor development of children. *(On demand)*

PHED 4205. Perceptual Motor Learning. (3) (3G) Prerequisite or corequisite: PHED 4204 or consent of instructor. Perceptual-motor learning of children and its effect on school performance and the relationships of perceptual-motor development to reading, writing and mathematics. *(On demand)*

PHED 4208. Perceptual Motor Therapy. (3) (3G) Prerequisite: PHED 4205 or consent of the instructor. Observation of and evaluation and therapy for children with perceptual-motor dysfunctions. May be repeated for credit with approval of instructor. *(On demand)*

PHED 4210. Perceptual Motor Therapy Laboratory. (1) (1G) Prerequisites/corequisite: PHED 4204 or 4205 or 4208. *(Fall, Spring)*

PHED 4211. Perceptual Motor Therapy Laboratory. (2) (2G) Prerequisites/corequisite: PHED 4204 or 4208. *(Fall, Spring)*

PHED 4212. Perceptual Motor Therapy Laboratory. (3) (3G) Prerequisite/corequisite: PHED 4204 or 4205 or 4208. Supervised observation, testing and clinical teaching of children with perceptual-motor dysfunction. Course may be repeated for credit with approval of instructor. *(Fall, Spring)*

Department of Human Services

Chairperson: Professor Burke; *Professors:* Barret, McLeod, Robinson, Rowland; *Associate Professors:* Nkomo, Post; *Assistant Professors:* Bradley, Furr, Isenhour, Shepard, Webb; *Clinical Assistant Professor:* Blackwell; *Lecturer:* Springs; *Adjunct Assistant Professors:* Alexander, Ellis, Harpster, Huey, Lynch, Miller, Newman, Sykes, Yonkovig; *Adjunct Lecturers:* Lynch, Morgan, Phillips, Pruitt

The Department of Human Services offers a skill-oriented curriculum which prepares students as professionals and paraprofessionals to serve individual or group needs in a variety of agency, business, educational or governmental settings. Two undergraduate programs are administered by the Department: Human Services, and Child and Family Development. On the graduate level, the Department administers the Counselor Education Program, which provides training at the master's and sixth-year levels for counselors in school and community agency settings. (See pages 344-348 for more information.)

Human Services. The purpose of human services is to enhance individuals' personal and social well-being during the lifespan; to promote the healthy development of families and interfamily relationships; and to encourage the development of groups and communities. The Human Services major offers students a program of study designed to meet their personal interests and career goals, while they obtain broad-based knowledge and firsthand skills in the helping professions. Graduates of the program can expect to play a key role in social development as advocates for the disadvantaged, providers of preventive health care services, paraprofessionals who offer physical and emotional support, and knowledgable citizens who help shape their communities.

Child and Family Development. The Department offers both a major and a minor in the area of child and family development. Children are studied in their relationships within the family and the community, and knowledge from both the natural and social sciences is applied to the child — as an individual — in the many roles and settings in which children function in society. A primary goal of the Child and Family Development Program is to improve the quality of life for children and their families. Graduates of the program may become preschool teachers (in Headstart, schools, or daycare), parenting education specialists, workers in family/child agencies, or teachers of developmentally delayed and disabled children. The program also prepares individuals to work with children and families in areas of scouting, YMCA and YWCA, churches and volunteer services. Graduates of the program are prepared to pursue graduate studies in child development.

BACHELOR OF ARTS

HUMAN SERVICES. A major in Human Services leading to the B.A. degree consists of a minimum of 120 semester hours, including: at least 39 semester hours in Human Services, 18 semester hours in a related area of concentration, and fulfillment of general education requirements. The related concentration requirement may be fulfilled by one of the University minors or a thematic interdisciplinary minor or concentration (such as substance abuse, public relations in human services, aging or volunteerism), jointly designed by the student and his/her adviser.

CHILD AND FAMILY DEVELOPMENT. A major in Child and Family Development leading to the B.A. degree requires both academic study and practical experience. The major consists of a minimum of 120 semester hours including: at least 39 semester hours in Child and Family Development with an average grade of *C;* general education requirements; and 18 semester hours of required related work to include six semester hours in other selected areas. The remaining semester hours may be fulfilled by elective courses.

Child and Family Development Minor. A minor in Child and Family Development is available to all undergraduates and consists of 18 semester hours to include CHFD 2111, 2113, 2115, 3115, and six semester hours of CHFD electives.

Human Services Minor. A minor in Human Services requires 18 semester hours including HUSV 1100, 2100, 3110, 4115, a 3000-level Human Services course and either HUSV 5103 or 5104. A 2.5 GPA is required (1) for acceptance into the Human Services minor and (2) in all human service courses completed.

SUGGESTED SCHEDULE: HUMAN SERVICES

Freshman Year

GOAL II 3	GOAL II 3
GOAL III 3	ENGL 1102 3
GOAL V: (A) 3	FORL 1202 or Elective 3-4
ENGL 1101 3	HUSV 1100 3
FORL 1201 or Elective 3-4	GOAL IV 4

Sophomore Year

GOAL IV 4	GOAL IV 4
GOAL I: (W) 3	HUSV 3110 3
GOAL V: (L) 3	CSLG 3101 3
HUSV 2100 3	GOAL VI: (C) 3
	Related Area of Concentration/Minor 3

Junior Year

HUSV 4115 3	HUSV 3210 3
GOAL I: (W) 3	HUSV 5103 or 5104 3
HUSV 3610 3	GOAL VI: (X) 3
Elective (HUSV 3190 recommended) 3	Area of Concentration/Minor 6
Area of Concentration/Minor 3	

Senior Year

HUSV 3410 6	HUSV 3416 6
Area of Concentration/Minor 6	HUSV 3619 3
Elective (HUSV 5104 recommended) 3	Elective 3

SUGGESTED SCHEDULE: CHILD AND FAMILY DEVELOPMENT

Freshman Year

ENGL 1101	3	ENGL 1102	3
FORL 1201	4	FORL 1202	4
GOAL II	3	HUSV 1110	3
GOAL III	3	GOAL V: (L)	3
GOAL V: (A)	3	GOAL II	3

Sophomore Year

EDUC 1110	3	CHFD 2115	3
CHFD 2111	3	CHFD 2416	3
CHFD 2412	3	GOAL IV	4
GOAL IV	4	GOAL I: (W)	3
GOAL I: (W)	3	Elective	3

Junior Year

HUSV 4115	3	Related Area (Sociology)	3
CHFD 3412	3	Related Area (Elective)	3
CHFD 2113	3	GOAL VI: (X)	3
GOAL VI: (C)	3	Related Area (Psychology)	3
Related Area (Psychology)	3	Elective	3

Senior Year

CHFD 3115	3	CHFD 3416: Internship	6
Related Area (Sociology)	3	CHFD 3619	3
Related Area (Elective)	3	Elective	3
Electives	5		

CHILD AND FAMILY DEVELOPMENT (CHFD) COURSE DESCRIPTIONS

Courses for Undergraduates

CHFD 2111. Child Study: Interpreting Children's Behavior. (3) A focus on the growth of individuals and the forces which influence this growth. Current theories of child development with emphasis on the complex interaction between heredity and environmental factors. *(Fall)*

CHFD 2113. Infant and Early Years. (3) Examination of development from its beginnings to early childhood with emphasis on theories, research and other data relative to infancy and the early years and implications for curriculum design. *(Fall, Summer)*

CHFD 2115. Education of the Young Child. (3) Developmental needs of children as related to group care situations, curriculum decisions, and the design of early learning environments. Emphasis on current issues, the role of the caregiver (parent and/or teacher), and the process of guiding and teaching young children. (Designed to complement Practicum II.) *(Spring, Summer)*

CHFD 2412. Practicum I: Child Study: Observing and Recording Children's Behavior. (3) Investigates the purposes and methods of observation of young children. Content includes observational activities, actual and simulated, individual and group. Students will observe, record, and analyze children's physical-motor, social, emotional, moral and cognitive development using developmental theory. (Designed as the Field Study for CHFD 2111.) *(Fall)*

CHFD 2416. Practicum II: The Child and the Community. (3) A supervised practicum with placements in settings depicting care and educational learning experiences for children. Emphasis on program components, the evaluation and development of materials and practices for care and education. Students spend three half-days per week in placement. (Designed as the Field Study for CHFD 2115.) *(Spring)*

CHFD 3115. Learning and Development. (3) Examination of the relationship of learning and development with emphasis on conceptualizing child development and interpreting data related to growth and development. Specific attention to the affective, cognitive and psychomotor domains and theories as seen in a multicultural context. *(Fall, Spring, Summer)*

CHFD 3412. Practicum III: The Family and the Community. (3) Explores the nature of the family as a living, dynamic system within the larger system of society. Seeks to integrate current theories of family interaction, emerging family roles, and alternative patterns of family adjustment with practice in community settings. Students work in settings impacting on family life. *(Fall)*

CHFD 3416. Internship in Child and Family Development. (6) An intensive program working with children and families in the field. The student, in consultation with the adviser, plans the scope and sequence of the internship experience. The focus is on the integration of theory and practice and is planned as a semester's assignment. *(Spring)*

CHFD 3619. Senior Seminar in Child and Family Development. (3) A synthesizing course of study focusing on review, compilation, analysis and evaluation of the literature, research and experiences relevant to the student's area of focus. Students will present a plan of action/study for approval prior to registration for this semester. *(Spring)*

CHFD 3800. Individual Study in Child and Family Development. (1-6) Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(Fall, Spring, Summer)*

COUNSELING AND GUIDANCE (CSLG) COURSE DESCRIPTIONS

Courses for Undergraduates

CSLG 3101. Guidance: Behavior and Growth. (3) Introduction to counseling with emphasis on understanding approaches and techniques for helping others make decisions directed toward solution of problems and facilitation of self-knowledge and growth. *(Fall, Spring)*

Courses for Graduate Students and Advanced Undergraduates

CSLG 5100. Counseling Needs of Women. (3) (3G) Topics include women's development and needs, the problems they bring to counselors, strategies for helping with them, myths about women and biases in psychological research. *(Spring) (Alternate years)*

HUMAN SERVICES (HUSV) COURSE DESCRIPTIONS

Courses for Undergraduates

HUSV 1100. Exploration of Human Development. (3) An introduction to the theories of major developmentalists and an interpretation into the reality of behavior. The course is designed to assist an individual to look at one's self and relationship to others. *(Fall, Spring)*

HUSV 2100. Introduction to Human Services. (3) A focus on the foundations and framework of issues and factors affecting the structure and delivery of human services. *(Fall, Spring)*

HUSV 3101. Cultural and Scientific Impact. (3) Interaction between the practice of science and its impact upon learning in modern culture. *(Fall)*

HUSV 3102. The Adult Years. (3) Biological and psychological development pertaining to maturation. *(On demand)*

HUSV 3110. Leadership Theory and the Dynamics of Group Processes. (3) Examination of the dynamics of leadership behavior and group processes. Combines the theoretical and practical aspects of leadership through a variety of teaching/learning formats including small group laboratory methods. *(Spring)*

HUSV 3190. Public Relations for Human Services Agencies. (3) The basics of the theories and practices of public relations as applied to human services organizations. *(Fall)*

HUSV 3210. Management of Human Service Agencies. (3) Prerequisites: HUSV 2100 and 3110. Introduction to terminology, theories, concepts, processes and functions in the management of human service agencies. *(Spring)*

HUSV 3410. Practicum in Human Services. (6) In an agency setting, practicum provides an opportunity for the student to apply general theory to practical experience, professional and ethical issues, as well as skill building. *(Fall, Spring, Summer)*

HUSV 3416. Internship in Human Services. (6) In a setting specifically appropriate to his/her area of concentration, the student is involved in a variety of practices which further integrates experiential learning and a theory with emphasis on skill development. *(Fall, Spring, Summer)*

HUSV 3619. Senior Seminar in Human Services. (3) A synthesis, coordination and supplement to previous learning. Students share and evaluate their internship experiences and address specific topics that better prepare them for the job market. *(Fall, Spring)*

HUSV 3800. Individual Study in Human Services. (1-6) Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(Fall, Spring, Summer)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

HUSV 4115. Effective Human Systems. (3) (3G) Systems approach to human development with emphasis on the need for coping skills which allow individuals to function effectively in various settings in life. *(Fall, Spring)*

Courses for Graduate Students and Advanced Undergraduates

HUSV 5000. Selected Topics in Human Services. (3-6) (3-6G) Prerequisite: permission of the Department of Human Services. Seminars, independent study and clinical experiences. May be repeated for credit, with approval. *(Fall, Spring)*

HUSV 5103. Substance Abuse: Primary Prevention. (3) (3G) Primary prevention concepts, research, and programming and introduction to psychoactive drugs, their effects on the human physical function, intellectual perception, and psyche. *(Spring) (Evenings)*

HUSV 5104. Substance Abuse: Approaches to Intervention and Treatment. (3) (3G) Concepts of drug dependency and various approaches to intervention and treatment. *(Fall) (Evenings)*

Department of Teaching Specialties

Chairperson: Professor Rose; *Professor:* Algozzine; *Associate Professors:* (Clinical) Anderson, Antonak, Calhoun, Roberts, Test, White, Wood; *Assistant Professors:* Beattie, Clay, Cooke, Edwards, Enright, Greenland, Rickelman, Whaley; *Clinical Assistant Professors:* Adderholdt-Elliott, S. Beattie, Clay, Haney, F. Spooner

The faculty of the Department of Teaching Specialties is committed to the following ideals: Education is a lifelong learning process; individuals with special learning needs are entitled to quality education at all age levels; and specialized teaching can and should be provided in all educational environments. The faculty supports the College's broad missions of teaching, research and service and is committed to the preparation of high quality professionals prepared to assume a role in the education profession. Therefore, students in the areas of Reading Education, Special Education, English as a Second Language, and Adult Education will be prepared for effective service in public and private schools, the workplace, and other educational environments.

The Department of Teaching Specialties offers programs leading to the Bachelor of Arts and the Master of Education degrees with undergraduate and graduate teaching certification. The Certificate of Advanced Study (sixth year) is offered in special education. (See pages 360-366 regarding the graduate programs.)

The undergraduate teacher education program offered by the Department provides the first crucial step in career development to become teachers at grades K-12: Special Education, Mental Handicap or English as a Second Language (TESL). For these types of certification, the Department offers coursework and clinical experiences to prepare students to identify learner needs, design curricula, develop instructional materials, and use effective teaching practices.

Students receiving certification in K-12: Special Education/Mental Handicaps and TESL receive the Bachelor of Arts degree with a major in education or an appropriate discipline in Arts and Sciences.

Students majoring in Special Education are required to complete a second academic concentration. The student should select the second concentration in consultation with their academic adviser during their second semester. Second concentrations considered complementary to Special Education are Anthropology, English, Foreign Languages (French, German, Spanish), Psychology and Sociology.

BACHELOR OF ARTS

Each program leading to the B.A. degree in Education includes the following requirements:

I. General Studies Component
The general education component meets general education requirements of The University and is intended to provide a foundation for preparation in the student's area of specialization, to support the professional studies component, and to provide the student with the knowledge and skills generally needed by educated persons. This foundation is designed to include exposure to science, mathematics, creative arts, English, history and the social sciences, and health, physical education and safety.

II. Professional Education Component
The purpose of the professional education component is to provide the general professional competencies required of all teachers. This component provides for the development of knowledge and skill in understanding the role of the teacher and of education in our society, planning for instruction, classroom management, and the evaluation of pupil progress and instruction.

III. Areas of Specialization Component
The specialization component is intended to provide the prospective teacher with the skills and knowledge uniquely applicable to special education. The Special Education specialization is differentiated in terms of the developmental stages of the children with whom the prospective teacher will be working as well as the knowledge of content that would qualify the teacher to provide instruction in resource rooms or self-contained classrooms to learners with mild to moderate handicapping conditions.

THE PROFESSIONAL EDUCATION SEQUENCE

Admission. Students should obtain an application for formal admission to the teacher education program in the Department of Teaching Specialties before the end of the sophomore year. To be admitted to the professional education program the student must meet the following criteria:

1. An overall GPA of 2.25 and a minimum of 30 semester hours;
2. A grade of *C* or better in EDUC 2100;
3. Approval signatures from adviser(s), program coordinators and department chairperson;
4. Scores of 636 and 631 respectively on Core I and II of the National Teacher Examination (NTE).

Junior Year Transfer and Irregular Certification. Students should follow the procedures outlined above and apply for admission to the professional education sequence during their first semester of enrollment at UNC Charlotte.

Retention in Professional Education Sequence. Retention in the teacher education program is contingent upon the student's maintenance of the following criteria:

1. A GPA of 2.75 or better in professional education courses and a GPA of 2.75 in the area of specialization.
2. A grade of *C* or better in all professional education courses and the area of specialization.
3. An overall GPA of 2.5 or above.

REQUIREMENTS FOR CERTIFICATION PROGRAMS

Special Education: Mental Handicaps. This program is designed for students who intend to become teachers of learners with mild to moderate mental handicaps (K-12). Degree requirements include 24 hours of professional studies, 39-semester hour area of specialization, 15 semester hours of electives and 53 semester hours of general studies requirements.

ADMISSION TO STUDENT TEACHING

Following are criteria for admission to student teaching. A student must have:

1. The recommendation of his/her advisers.
2. Completed prerequisite general studies, professional studies and area of specialization requirements.
3. A GPA of 2.75 or above in the area of specialization.
4. A GPA of 2.75 or above in the professional studies sequence.
5. An overall GPA of 2.5 or above.
6. Senior status with grades of *C* or above in all courses required for certification.

Additional Certification. Additional certification may be obtained in English as a Second Language. The certification program must be added to the degree program described above or to Elementary, Middle Grades, or Secondary Education programs offered by the Department of Curriculum and Instruction.

Requirements for English as a Second Language. The student will complete a 21-hour professional preparation sequence: Part I: Foundations (12 hours), ENGL 2132, 4263, and 4166, and one course from the following: ENGL 4165, ANTH 4120, ANTH 4090, or FORL 4200; Part II: Professional Skills and Content (six hours), TESL 5101 and 5103; and Part III: Student Teaching (3 hours).

SUGGESTED SCHEDULE: SPECIAL EDUCATION K-12 CERTIFICATION

First Semester

ENGL 1101 (GOAL I)	3
BIOL 1110 + L (GOAL IV)	4
HIST 1160 or 1161 (GOAL VI: C)	3
SOCY 1101 (GOAL III)	3
MUSC 1132 or THEA 1101 (GOAL V: A)	3

Second Semester

ENGL 1102 (GOAL I)	3
ESCI 1101 + L (GOAL IV)	4
GEOG 1101 (GOAL VI: X)	3
PSYC 1101 + (GOAL IV)	4
Elective	3

Third Semester

MAED 2101 (GOAL II)	4
EDUC 2100	3
ARTS 2170	3
EDUC 2150 (GOAL VI: C)	3
CHFD 3115	3

Fourth Semester

MAED 2102 (GOAL II)	4
SPED 3160	3
PSYC 2109	3
EDUC 2110	3
Elective (GOAL I: W)	3

Fifth Semester

SPED 4110	3
SPED 3170	3
EDUC 3120	3
SPED 3180	3
SPED 5130	3
Elective	3

Sixth Semester

SPED 3165	3
SPED 3190	3
PHED 3200	3
SPED 5120	3
PSYC 5153	3
Electives	3

Seventh Semester

READ 3151 (GOAL I: W)	3
ECON 5102	3
ENGL 3103 (GOAL V: L)	3
MAED 2103	3
*HLED 3101	3
Elective	3

Eighth Semester

SPED 3490	12

Note: Students need to see their advisers regarding changes in general education requirements.

READING (READ) COURSE DESCRIPTIONS

READ 3151. Reading and Language Development. (W) (3) Prerequisite: EDUC 2100. Corequisites: EDUC 3151 and ENGL 3103 or 3104. Reading process and reading instruction; relationship between language development and reading; field-based application of course content. K-4 and 4-6 sections. *(Fall, Spring)*

Advanced undergraduates may take 5000-level reading courses for undergraduate credit. For complete course descriptions, see page 362.

SPECIAL EDUCATION (SPED) COURSE DESCRIPTIONS

SPED 3160. Developmental Exceptionalities. (C) (3) Survey of human exceptionality, including exceptionally gifted and those with developmental disabilities and handicaps. *(Fall, Spring, Summer) (Evenings)*

SPED 3165. Community Resources. (3) Prerequisite: SPED 3160, 3170, 3180 and admission to teacher education program. Corequisite: SPED 3190. Exploration of community resources and services for exceptional children in both public and private facilities. *(Spring)*

SPED 3170. Special Education Assessment. (3) Prerequisite: SPED 3160 and admission to teacher education program. Corequisite: SPED 3180. An overview of the fundamental concepts in educational assessment of exceptional students. Emphasis is placed upon the utility and limitations of various assessment procedures. Standardized, criterion-referenced, and informal measures will be discussed. Additionally, multi-disciplinary process and Individualized Education Plan (IEP) development will be covered. *(Fall)*

SPED 3180. Special Education Methods and Materials: Elementary Level. (3) Prerequisite: SPED 3160 and admission to teacher education program. Corequisite: SPED 3170. An overview of curriculum instructional methods and materials which are used with learners with special needs at the elementary level. *(Fall)*

SPED 3190. Special Education Methods and Materials: Secondary Level. (3) Prerequisite: SPED 3160, 3170, 3180 and admission to teacher education program. Corequisite: SPED 3165. Designed to provide students with knowledge regarding instructional methods, materials, and curriculum for mentally handicapped students in secondary level classrooms. *(Spring)*

SPED 3490. Student Teaching: Special Education Grades K-12. (12) Prerequisites: approved application for student teaching; completion of general studies, professional studies, and specialization requirements; a GPA of 2.75 in major, 2.75 in professional studies, and a 2.5 overall. Grade of *C* or better in all professional education courses. Program of experiential learning activities in approved special education settings under the supervision and coordination of University faculty and school personnel. Emphasis on development of competencies in the areas of planning, evaluating, selecting and implementing instructional strategies to facilitate learning in exceptional children, working in consultation with parents and professionals. Seminars are held to facilitate professional skill development. *(Fall, Spring)*

Advanced undergraduates may take SPED 5130 for undergraduate credit. For a complete course description see page 363.

TEACHING SPECIALTIES (TESP) COURSE DESCRIPTIONS

TESP 3800. Individual Study in Teaching Specialties. (1-6) Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to permit students to examine specific educational/human services literature or develop special projects under the direction of a faculty member. May be repeated for credit with Departmental approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

Aerospace Studies

Chairman: To Be Named; *Assistant Professors (Mil.):* Chestnut, McDaniel

Aerospace Studies gathers information and develops theories about aerospace defense roles. The goal of the department is to provide both an educational and a pre-professional program that examines multi-disciplinary issues as they relate to leadership participation in military life. The program offers courses both for the student enrolled in Air Force Reserve Officer Training Corps and for the student interested in military issues across disciplinary lines.

Academic Program. The academic portion of the program is designed for the student interested in gaining a military perspective on leadership, management, ethics and discipline. The student who pursues this concentration should take the following courses: Leadership and Management, Defense Administration and Military Management; National Security Issues in Contemporary American Society and The Defense Leader: Perspectives on Ethics and Justice. Participation in the Leadership Laboratory portion is available by special permission.

Pre-professional Program. The pre-professional track of the Aerospace Studies program is run under the auspices of the Air Force Reserve Officer Training Corps. It provides two programs for students to qualify for a commission as a second lieutenant in the Air Force. To be eligible for the Air Force ROTC pre-professional program, a student must be a citizen of the United States, physically qualified for commission in the Air Force, not under 14 years of age and, upon graduation, no more than 30 years of age. For those with prior military service, commissioning must occur not later than age 35. If designated for flight training, the student must be able to complete all commissioning requirements prior to age 26½.

Cadets must pursue work leading to at least a bachelor's degree and be willing to sign a formal agreement at the beginning of the advanced course or upon initiation of a college scholarship. The agreement, an enlistment into the Air Force Reserve, obligates the student to remain in the ROTC program, accept a commission and serve the required period in the Air Force upon graduation. Cadets must also demonstrate proficiency or successfully complete a course in mathematical reasoning before commissioning.

Four-Year Program. This program, called the General Military Course or GMC offers coursework as electives within the lower division. GMC students not on AFROTC scholarship incur no military obligation. Each candidate for commissioning must pass an Air Force aptitude test, a physical examination, a physical fitness test, and be selected by an interview board of Air Force officers at the conclusion of both courses. If selected, the student then enrolls in the Professional Officer Course (POC), the last two years of the Air Force ROTC curriculum. Students attend a four-week field training course at an Air Force base normally between the sophomore and junior year. All students in the POC receive a tax-free subsistence allowance of $100 a month. Upon successful completion of the POC and the college requirements for a degree, the student is commissioned in the U.S. Air Force and enters active duty as a Second Lieutenant.

Two-Year Program. The basic requirement for entry into the two-year program is that the student has two academic years of college work remaining, either at the undergraduate or graduate level, or a combination of both. Applicants seeking enrollment in the two-year program must pass an Air Force aptitude and medical examination, a physical fitness test, and be selected by an interview board of Air Force officers. After successfully completing a six-week field training course at an Air Force base, the applicant may enroll in the Professional Officer Course in the Air Force ROTC program. Upon completion of the POC and the college requirements for a degree, the student is commissioned and enters active duty as a Second Lieutenant. All students in the two-year program receive a tax-free subsistence allowance of $100 a month.

SCHOLARSHIP PROGRAMS

Air Force ROTC awards scholarships at the freshman, sophomore and junior levels. They are only provided for the pre-professional track leading to a commission in the U.S. Air Force. They are available to qualified cadets in the two-year and four-year programs. Scholarships are given on a semester basis. The maximum is eight semesters (four years); the minimum, four semesters (two years). Scholarships of seven, six and five semesters are also available.

Enrollment in the Aerospace Studies program is a requirement for scholarship eligibility. Scholarships cover full tuition, laboratory expenses and books. Scholarship cadets also receive a tax-free subsistence allowance of $100 a month.

Air Force ROTC students who accept a scholarship must agree to successfully complete at least one semester of college instruction or the equivalent in a major Indo-European or Asian language before commissioning. Scholarship recipients are also required to successfully complete an English composition course prior to entry into the junior class.

Four-year scholarships are also available to high school students. High school students interested in making application should write: Air Force ROTC (PA), Maxwell AFB, Alabama 36112 during their junior year or before December first of their senior year.

ADJUNCT PROGRAMS

Field Training. Two Field Training courses are offered, either of which is normally completed during the summer between the sophomore and junior years. One covers a four-week period for students in the four-year program; the other covers six weeks and is designed for two-year program applicants. Transportation, lodging, meals and approximately $150 per week are provided by the Air Force during Field Training. Independent study credit may be sought for Field Training.

Leadership Laboratory. Those students pursuing the pre-professional track will participate a minimum of one hour per week during every semester of enrollment. The objective is to provide a laboratory environment where each student receives an opportunity to learn and develop leadership and management abilities. Cadets plan, organize, and carry out the entire cadet program with only minimal guidance from the staff advisers.

Professional Development Program. Students enrolled in the junior and senior years of AFROTC may volunteer to attend a two- or three-week orientation program at an Air Force base. This is an opportunity to observe and experience the working environment of an active Air Force facility and to obtain specific career information. Transportation, lodging, meals, and approximately $200 per week are provided by the Air Force during participation in this voluntary program.

Light Aircraft Training Program. Cadets designated to enter U.S. Air Force Undergraduate Pilot Training after graduation participate in the Light Aircraft Training Program between their junior and senior year unless they already have a private pilot's license. Each cadet receives 14 hours of instruction taught by Air Force personnel at no expense to the student. This training also includes ground school instruction.

AEROSPACE STUDIES (AERO) COURSE DESCRIPTIONS

AERO 1101. The Air Force Today. (1) A study of the doctrine, mission and organization of the U.S. Air Force; an introduction to officership and professionalism in military leadership; and examination of basic communication skills. *(Fall)*

AERO 1101L. The Air Force Today. (0) Leadership Lab. Pre-professional corequisite: AERO 1101. *(Fall)*

AERO 1102. The Air Force Today. (1) A continuation of AERO 1101 to include a study of the U.S. tactical and airlift forces, their mission, functions and employment; strategic offensive and defensive forces, aerospace support forces and a review of Army, Navy and Marine general purpose forces. *(Spring)*

AERO 1102L. The Air Force Today. (0) Leadership Lab. Pre-professional corequisite: AERO 1102. *(Spring)*

AERO 2101. Development of Air Power. (1) An examination of the growth of airpower over the past 80 years by reviewing the various concepts of employment and focusing upon the factors that prompted research and technological change. Includes an intermediate assessment of communicative skills. *(Fall)*

AERIO 2101L. Development of Air Power. (0) Leadership Lab. Pre-professional corequisite: AERO 2101. *(Fall)*

AERO 2102. Development of Air Power. (1) A continuation of AERO 2101 with emphasis on a variety of events and elements in the history of airpower, especially where these provide significant examples of the impact of airpower on strategic thought. *(Spring.)*

AERO 2102L. Development of Air Power. (0) Leadership Lab. Pre-professional corequisite: AERO 2102. *(Spring)*

Courses for Advanced Undergraduates

AERO 3101. Defense Administration and Military Management. (W) (3) Concepts of Air Force leadership. A study of the meaning of professional responsibilities of the professional officer, the foundation of the military profession, theories of leadership, discipline and human relations. Emphasis on written and oral communication. *(Fall)*

AERO 3101L. Defense Administration and Military Management. (0) Leadership Lab. Pre-professional corequisite: AERO 3101. *(Fall)*

AERO 3102. Leadership and Management. (W) (3) Concepts of Air Force management, including principles of and functions of management, Air Force personnel policies, channels of communication, problem solving, quantitative models and simulations, the command-staff team, the subordinate, performance standards, and Air Force controls. Emphasis on written and oral communication. *(Spring)*

AERO 3102L. Leadership and Management. (0) Leadership Lab. Pre-professional corequisite: AERO 3102. *(Spring)*

AERO 3201. National Security Issues in Contemporary American Society. (C) The executive-legislative matrix of our national government is developed and compared with other governmental systems. Conflict management methods are examined including arms control, alliances and regional security issues. *(Fall)*

AERO 3201L. National Security Issues in Contemporary American Society. (0) Leadership Lab. Pre-professional corequisite: AERO 3201. *(Fall)*

AERO 3202. The Defense Leader: Perspectives on Ethics and Justice. (V) (3) Continued development of the fundamentals presented in AERO 3201 with special emphasis on the role of the emerging military leader in implementing national policy decisions. Discussion of selected ethical and military justice scenarios are presented to prepare the student with an adequate intellectual framework for action. *(Spring)*

AERO 3202L. The Defense Leader: Perspectives on Ethics and Justice. (0) Leadership Lab. Pre-professional corequisite: AERO 3202. *(Spring)*

Military Science Area (ROTC)

Professor (Mil.): Moncure; *Assistant Professors (Mil.):* Fry, Mason, McNeal, Stearns

Participation in Army ROTC enhances the education of both men and women by providing unique leadership and management training, along with practical experience in these areas. It helps students develop many of the qualities basic to success in the Army, or in civilian careers. Students earn a college degree and an officer's commission at the same time. The program is designed to complement the student's major area of study; participation in Army ROTC is compatible with all major areas of study. The Basic Course and the Advanced Course comprise the Military Science curriculum.

Basic Course. The Basic Course is usually taken during the freshman and sophomore years. It is open to all students and incurs no military obligation. Topics include management principles, leadership development, national defense organization, land navigation, small unit tactics, survival techniques, military courtesy, and physical training. Uniforms and textbooks are provided at no cost to students. Students unable to attend the Basic Course may still qualify for the Advanced Course by attending a paid six-week summer camp following their sophomore year. Placement credit is also available for veterans, members of the reserve components, and Junior ROTC participants.

Advanced Course. The Advanced Course provides instruction in military history, advanced tactics, techniques of effective leadership, and military ethics and professionalism. It is normally taken during the junior and senior years. Students successfully completing the Basic Course, who have demonstrated the potential to become officers and meet Army physical and academic standards, are eligible to enroll in the Advanced Course. Students receive a tax-free subsistence allowance of $100 per academic month and are required to attend a paid six-week summer camp at Fort Bragg, NC, between their junior and senior years. In addition to Military Science courses, students must complete HIST 2120 American Military History. Nursing students may enter the Advanced Course without Basic Course credit.

NURSING SUMMER CAMP

Nursing students enrolled in the Advanced Course attend a two-part summer camp between the junior and senior years. This consists of three weeks of basic military and leadership skills training at Fort Bragg, followed by three weeks of practical nursing training. The nurse intern training may be at Fort Bragg or another major Army Medical Center nationwide.

SCHOLARSHIP PROGRAM

One-, two-, and three-year scholarships are awarded on a competitive basis, providing full tuition and educational fees, a specified amount for books and supplies, and a tax-free subsistence allowance of $100 per academic month. Students do not have to be enrolled in Army ROTC to apply and incur no obligation by applying. Application timeframe is December to February each year. Special consideration is given to students in nursing, engineering and physical sciences. Four-year scholarships are available to nursing students who apply while in high school or prior to enrollment.

COMMISSION REQUIREMENTS

To obtain a commission in the Army, Army National Guard or Army Reserve, a student must successfully complete the Advanced Course, be recommended by the Professor of Military Science, and complete work leading to at least a baccalaureate degree.

MILITARY SCIENCE (MSCI) COURSE DESCRIPTIONS

Courses for Undergraduates

MSCI 1101. Basic Course I. (1) Introduction to ROTC and the U.S. Army including the rationale of the national defense structure and the mission and role of the Army. Introduction to modern theories of leadership and their application to today's environment. *(Fall, Spring)*

MSCI 1102. Basic Leadership Laboratory I. (1) Practical work in basic military skills and physical ability development. Introduction to land navigation, drill and ceremony, communications, and the Army's standard individual weapons with emphasis upon team work and confidence building through participation in leadership activities. Two laboratory hours per week. *(Spring)*

MSCI 2101. Basic Course II. (2) Introduction to map reading techniques, small unit tactics and the role of the junior officer in troop leading. First aid in a tactical environment will be surveyed. Three lecture hours per week. *(Fall, Spring)*

MSCI 2102. Basic Leadership Laboratory II. (1) Emphasis upon developing proficiency in basic military skills with students assuming leadership roles when the class functions as a military unit. Assertive, confident leadership through knowledge and practice will be stressed. Two laboratory hours per week. *(Spring)*

MSCI 3101. Advanced Course I. (3) Prerequisite: Basic Course or consent of the professor of military science. Introduction to the advanced ROTC area and an examination of branches of the Army, military teaching principles, management and small unit tactics, including refresher and advanced training in communications, drill and ceremonies, land navigation and physical fitness. Students must be successfully pursuing a commission in the Regular Army, Army Reserve or Army National Guard. *(Fall)*

MSCI 3102. Advanced Course II. (3) Prerequisite: MSCI 3101. Designed specifically to prepare cadets for attendance at advanced camp with emphasis on mastering skills necessary to operate and maintain military equipment and developing self-confidence. *(Spring)*

MSCI 3103. Advanced Leadership Laboratory I. (1) Prerequisite: MSCI 3101. Practical application and additional development of military skills and leadership principles with emphasis on mastery of all previous military skills with much of the training being performance oriented. Students develop their leadership by rotating through various leadership positions during the conduct of their training. Three laboratory hours per week. *(Spring)*

MSCI 3201. Advanced Course III. (3) Prerequisite: MSCI 3102. Examination of staff organization procedures and purpose including a detailed analysis of the total Army concept (Regular Army, Army Reserve, National Guard). Practical application of military briefing techniques and examination of the relationship of the Army officer and society through a survey of military history. *(Fall)*

MSCI 3203. Advanced Leadership Laboratory II. (1) Prerequisite: MSCI 3201. Extensive practical work in military planning and instructional techniques and special emphasis upon development of applied leadership skills necessary as a commissioned officer. Three laboratory hours per week. *(Spring)*

College of Engineering

Dean: Professor Snyder; *Associate Dean:* Professor Evett; *Assistant Dean:* Middleton

The College of Engineering offers baccalaureate degree programs in engineering, engineering technology, and computer science. On the graduate level, the College offers programs leading to Master's degrees in engineering and computer science, and, in cooperation with North Carolina State University, a program leading to the Ph.D. degree in engineering. (For more information regarding graduate programs in engineering, see the Graduate School section of this *Catalog.)*

The College comprises the Departments of Civil Engineering, Electrical Engineering, Mechanical Engineering and Engineering Science, Engineering Technology, and Computer Science.

The engineering programs offer professional engineering education to prepare students for careers as professional engineers and researchers. The engineering technology programs are designed to provide an opportunity for graduates of two-year associate degree engineering technology programs to continue their education at the baccalaureate level and to pursue careers as engineering technologists. The computer science program prepares students for careers in that field.

Baccalaureate Programs. The baccalaureate programs in engineering offer a professional engineering education which can be used as the foundation for several different career objectives: preparation for a career as professional engineers in industry, business or consulting; graduate study to prepare for careers in research, development or teaching; and a more general and more liberal engineering education with the objective of keeping a variety of career avenues open.

Whatever the career objective of the student, a sound engineering educational program must include substantial content in: (1) the humanities and social sciences, (2) the physical sciences, (3) mathematics, and (4) the engineering sciences. Also, (5) there must be an in-depth experience in creative engineering design. The student expecting to accept employment in industry may wish to emphasize the engineering design and engineering science aspects of his or her program, while the student preparing for graduate study might emphasize the mathematics and science aspects. Some engineering graduates ultimately take on executive and management responsibilities in industries and firms which are based upon engineering products and engineering services. Such students may choose to construct an elective option in their program which includes business administration and economics offerings, and other courses to strengthen their communication skills.

The engineering curricula prescribed by the faculty of UNC Charlotte give thorough attention to the five essential components of a sound program of study. Those elements which are considered basic to every program of study are specified in each curriculum outline and result in freshman requirements which are essentially the same for all engineering students. The common basic core serves not only as the educational foundation for the professional engineering courses later in the program but also provides solid preparation for the first step in the professional engineering registration process.

Engineering students are strongly encouraged to pursue the requirements for registration as a Professional Engineer. The first step in the registration process is the successful completion of the Fundamentals Exam (also known as the EIT—Engineer in Training—Exam). Students are encouraged to take this exam during their last semester prior to graduation. Additional requirements subsequent to graduation include the accumulation of at least four years of progressive engineering experience and successful completion of the Principles and Practice Exam.

ACADEMIC PROGRESSION REQUIREMENTS: BACHELOR'S DEGREE PROGRAMS IN ENGINEERING

I. **Freshman Engineering** is essentially a freshman advising program for students who meet the requirements for admission to the College of Engineering but who are not admitted directly to the lower division. Freshman Engineering students may be admitted to the lower division after completing the freshman year of study and meeting the requirements:

1. Maintain a GPA of at least 2.0.
2. Achieve a grade of *C* or better in CHEM 1101, MATH 1141, MATH 1142, PHYS 2221, ENGR 1100, and EEGR 1102 or MEGR 1102 or CEGR 1102.
3. Accumulate a total of no more than *two* repeats in mathematics, physics, and engineering courses. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

II. **Lower Division** is essentially the first two years of study. Although the content is not identical for all three major programs (civil, electrical, and mechanical engineering), the academic progression requirements are the same for all majors (including undecided majors):

1. Maintain an overall GPA of at least 2.0 and an engineering course GPA of at least 2.0.
2. Achieve a grade of *C* or better in CHEM 1101, MATH 1141, MATH 1142, PHYS 2221, ENGR 1100, and EEGR 1102 or MEGR 1102 or CEGR 1102.
3. Accumulate a total of no more than *three* repeats in mathematics, physics, and engineering courses. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

III. **Upper Division** is essentially the last two years of study *in a department major.* There are no undecided majors in the upper division.

1. A student can be admitted to the upper division from the lower division of a department only upon satisfactory completion of 59 hours of lower-division courses including all freshman-year courses, all required mathematics courses, and all required courses in the major. Consequently, transfer students normally are admitted initially to the lower division of the Bachelor's degree program. Also, students who change their major into engineering normally are admitted only to the lower division of the program.
2. A student in the lower division may, with the approval of the adviser, take no more than 12 credit hours of upper-division courses. In no case may a student in the lower division take an upper-division course which has another upper-division course as a prerequisite.
3. A student may not accumulate a total of more than *three* repeats of College of Engineering courses in the upper division. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

IV. **Discontinuance:** A student who is deemed to be making unsatisfactory academic progress will be recommended for discontinuance from the Bachelor's degree program. Some of the conditions under which students will be recommended for discontinuance include:

1. Failure to satisfy the requirements in I, II or III above or to be admitted to the upper division.
2. Failure to satisfy any prerequisite course after one repeat of that course.
3. Receiving two *F's* in any course in the program.
4. Compiling a grade point deficit of 14 or more in engineering courses.
5. Two successive semesters with a cumulative GPA of less than 2.0 in engineering courses.

The procedure for appeal of any discontinuance decision follows the standard policies of the College of Engineering.

Two Year Rule. Any engineering student who has been suspended for academic reasons from UNCC is eligible for one readmission to engineering after a minimum period of two years from the last semester of enrollment at UNCC. Under this rule only those courses for which the student has received a grade of *C* or better can be used to satisfy degree requirements. His or her grade point average will be based only on work attempted after readmission. Eligibility for continued enrollment is determined as in the case of transfer students.

Any student who voluntarily left UNCC and has not attended UNCC for two or more years may choose to be readmitted under this two year rule.

To qualify for honors or high honors, a student readmitted under the two-year rule must complete at least 48 hours in residency in computing the grade point average after readmission to UNCC.

Cooperative Education Program. Students in the College of Engineering may desire to obtain practical work experience while pursuing their degree by participating in cooperative education whereby a student alternates semesters of academic study with semesters of work experience in industry. The work experience is under the direction of the student's major department and is closely related to his or her field of study. Civil engineering, electrical engineering, and mechanical engineering students who complete the Co-op program may receive partial credit toward the experience requirement for registration as a Professional Engineer.

To be eligible for the Co-op program, an engineering or computer science student must have completed at least 24 credit hours at UNCC including a number of specified courses with a minimum GPA of 2.25. A transfer student is expected to have completed at least 12 hours at UNCC. An engineering technology student must have earned an Associate of Applied Science degree with a GPA of 2.5 or better (out of 4.0).

For a graduate to be designated as a Co-op student, he or she must participate in at least three semesters of work experience. Consequently, participation in Co-op Education usually means that the student will take five years to complete the engineering or computer science programs or three years (at UNCC) to complete the engineering technology program.

Students interested in learning more about the advantages and opportunities of participating in this program should contact the Office of Experiential Learning.

CONTINUING ENGINEERING STUDIES

The College of Engineering sponsors various special educational programs for practicing engineers, technologists, technicians and others in addition to its regular academic degree programs and courses. These include conferences, short courses, seminars and other continuing education programs designed to aid those practicing in the technical professions and occupations to keep abreast of the latest developments in the rapidly expanding technology. The courses listed below are offered on a periodic basis, while many others are offered on demand.

Anyone desiring further information on these courses or requesting special offerings may contact the Office of Continuing Education and Extension.

PROFESSIONAL ENGINEERING-BASICS. Forty-five hours of work reviewing mathematics, chemistry, economics and the basic engineering sciences as preparation for the Professional Engineering Fundamentals (EIT or Exam I) Examination.

PROFESSIONAL ENGINEERING-APPLIED. Fifty-five hours of work reviewing applications in chemical, civil, electrical and mechanical engineering and engineering economics as preparation for the Professional Engineering Principles and Practice (PE or Exam II) Examination.

ENGINEERING (ENGR) COURSE DESCRIPTIONS

Courses for Undergraduates

ENGR 1100. Introduction to Engineering. (1) Introduction to engineering as an area of study and as a career; engineering morality and public responsibility; professional development and professional registration. *(Fall, Spring)*

ENGR 3590. Engineering Cooperative Education Experience. (0) This course is required of Co-op students during the semester they are working. *(Fall, Spring, Summer)*

LIBERAL ENGINEERING STUDIES (LEGR) COURSE DESCRIPTIONS

The impact of technology on the present condition and future prospects of humankind has until recently received little formal study. The College of Engineering has attempted to respond to a sincere concern on the part of many students who realize that there are important social and environmental problems resulting from the radical present and future changes in technology. It is the aim of Liberal Engineering Studies to put these problems and their possible technical solutions into perspective.

The following courses are intended primarily for non-engineering students who wish to explore various aspects of societal-technological interactions. Engineering students may enroll but may not use these courses to fulfill requirements for any engineering degree.

LEGR 1111. Technological Bases of Society I. (3) Concepts underlying the systems which relate directly to the life of the individual in relation to the field of engineering. Emphasis on scientific ideas relevant to the student—ones that he or she should understand to participate in the decisions of an age of rapidly changing technology. Specific topics include decision making, optimization, modeling and systems. (May be taken with or without LEGR 1151.) *(On demand)*

LEGR 1112. Technological Bases of Society II. (3) Prerequisite: LEGR 1111. A continuation of LEGR 1111. Introduction to technological concepts which are applicable to the solution of problems of a social and economic, as well as a technical, nature—problems that are rapidly becoming the frame of reference for contemporary society. Specific topics include patterns of change, feedback, stability, and machines and systems. (May be taken with or without LEGR 1152.) *(On demand)*

LEGR 1151. Technological Bases of Society-Laboratory I. (1) Corequisite: LEGR 1111. A laboratory course designed to illustrate the concepts presented in LEGR 1111. Simulation of real life situations using simple laboratory equipment. Two laboratory hours per week. *(On demand)*

LEGR 1152. Technological Bases of Society-Laboratory II. (1) Prerequisite: LEGR 1151. Corequisite: LEGR 1112. A laboratory course designed to illustrate the concepts presented in LEGR 1112. A continuation of LEGR 1151. Two laboratory hours per week. *(On demand)*

LEGR 3090. Special Topics in Liberal Engineering. (1-4) Prerequisite: consent of the instructor. Supervised study or travel opportunities that are beyond the scope of existing courses. May be repeated for credit. *(On demand)*

LEGR 3111. Technology in Historical Perspective. (3) Prerequisite: junior standing. Selected historical cases in science, applied science and technology are reviewed to show the impacts that technological advances have had on our world. Emphasis is placed on the technologies and their effect on our physical environment rather than on the resulting change in our viewpoint toward society, economics or politics. *(On demand)*

LEGR 3114. Problems in Environmental Control. (3) Prerequisite: junior standing. Study of a range of environmental problems of interest to the class. The tracing of problem cases to their technological origins; the identification of available, feasible, technological origins; the identification of available, feasible, technological solutions to the specific problems treated. On-site inspection of industrial sources of pollution will be made in a series of field trips. *(On demand)*

LEGR 3116. Energy, Power and Conservation. (3) Prerequisite: junior standing. A survey of historic, current and future power sources and devices, including waterwheels and windmills, steam engines and turbines, internal combustion and jet engines, fission and fusion reactors and geothermal, tidal and solar power. Fuel resource reserves, costs, benefits and conservation will be studied. *(On demand)*

Department of Civil Engineering

Chairperson: Professor King; *Professors:* Bayer, Evett, Robertson, Wu;
Associate Professor: Janardhanam; *Assistant Professors:* Hummer, Poran, Reiber, Young

A major role of the civil engineer is to focus scientific and technological skills on the creation of physical facilities. Engineering and construction of these facilities advances society toward such basic goals as economic development, environmental protection and social well-being. The civil engineer may be involved in the design and construction of buildings, bridges, dams and other structures; in the development of water resources for urban use, industry and land reclamation; in the transmission of water and control of rivers; in the control of water quality through purification and proper waste treatment; in transportation systems including highways, mass transit, airports, railroads, pipelines, canals and harbor facilities; in the problems associated with the environment including air pollution, noise pollution, ecological effects, land development, urban and regional planning; and in a wide range of services—all involving the health, safety and welfare of the public. The civil engineer must bring about a satisfactory blending of the constructed facility with the natural environment and the social environment, creating an optimum relationship between the human and the environment.

The objective of the Civil Engineering program is to provide the student with not only the latest technology but also opportunities to develop the social science and management skills required to assess needs, evaluate social and environmental impacts, and operate the engineering systems. Such opportunities are insured through the broadened curriculum found in the Department, and the encouragement of interactions with other departments and colleges of The University.

The Department offers a Bachelor of Science in Civil Engineering (B.S.C.E.) degree, and administers a program leading to a Master of Science in Civil Engineering (M.S.C.E.) degree and the Master of Science in Engineering (M.S.E.) degree. For information about the master's program, see the *Graduate Section* of this *Catalog*.

Some students will wish to plan early in their undergraduate careers for continuation of their engineering studies beyond the first degree. The large number of fields of graduate study which can logically follow the curriculum offered by the Department of Civil Engineering may influence how each student plans a program of study. The technical elective sequence allows flexibility for concentration in specific areas, and each student will design a technical elective program with the advice and approval of his or her adviser in order to achieve an individual goal.

The program in Civil Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (B.S.C.E.)

A major in Civil Engineering leading to the B.S.C.E. degree consists of a total of 132 credit hours. These requirements are:

English	6
Humanities and Social Science Electives	12
Mathematics	17
Physics	11
Chemistry	4
Science Elective	3
Freshman Engineering	1
Electrical Engineering	3
Engineering Science	9
Mechanical Engineering	6
Departmental Requirements	42
Technical Electives	15
Economics	3
	132

The social science and humanities electives must be chosen to satisfy Goals III, V and VI of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and must complement the student's overall educational plan.

The technical elective sequence allows flexibility for concentration in specific areas, and each student will design a technical elective program with the adviser's advice and approval in order to achieve an individual goal. The technical electives must contain at least six hours of coursework dealing with engineering science, analysis, synthesis or design, with the remaining nine hours being selected from the areas of engineering, science, mathematics, business and communications.

All civil engineering majors must satisfactorily complete the Freshman Engineering course ENGR 1100 during their first semester in attendance in civil engineering at UNC Charlotte.

CURRICULUM OUTLINE: B.S.C.E. DEGREE

Freshman Year

MATH 1141 Calculus I 4	MATH 1142 Calculus II.....4
CHEM 1101 Principles of Chemistry.....3	PHYS 2221 Dynamics.....3
CHEM 1101L Chemistry Lab 1	PHYS 2221L Experimental Physics I.....1
ENGL 1101 English.....3	Science Elective 3
ENGR 1100 Intro. to Engineering 1	CEGR 1102 Computer Applications 2
Humanities or Social Science.....3	ENGL 1102 English.....3

Sophomore Year

MATH 2141 Calculus III 3	MATH 2171 Differential Equations.....3
STAT 2122 Introduction to Statistics.....3	PHYS 2241 Modern Physics 3
PHYS 2231 Electricity & Magnetism 3	ESGR 2142 Engineering Mechanics II 3
PHYS 2231L Experimental Physics II 1	ESGR 3141 Solid Mechanics 3
ESGR 2141 Engineering Mechanics I.....3	CEGR 2152 Measurements Lab 2
Humanities or Social Science.....3	ECON 2102 Principles of Economics.....3
CEGR 2101 Engineering Drawing 2	

Junior Year

MEGR 3114 Fluid Mechanics 3	MEGR 3111 Thermodynamics I 3
EEGR 2161 Basic Electrical Engr. I.....3	CEGR 3152 Transportation Lab 2
CEGR 3121 Structural Analysis 3	Technical Elective 3
CEGR 3141 Environmental Engr. I 3	Technical Elective 3
CEGR 3151 Environmental Lab 2	Technical Elective 3
CEGR 3161 Transportation Engr. 3	Humanities or Social Science.....3

Senior Year

CEGR 3221 Steel Design 3	CEGR 3252 Geotechnical Lab.....2
CEGR 3225 Concrete Design.....3	CEGR 3272 Systems and Design II 3
CEGR 3251 Concrete and Steel Lab 2	CEGR xxxx Department Elective 3
CEGR 3268 Geotechnical Engineering.....3	Technical Elective 3
CEGR 3271 Systems and Design I 3	Technical Elective 3
Humanities or Social Science.....3	CEGR 3281 Professional Development 1

CIVIL ENGINEERING (CEGR) COURSE DESCRIPTIONS

CEGR 1102. Computer Applications. (2) Introduction to computer programming through the study of FORTRAN IV, including the use of subprograms. Civil engineering applications will be stressed. *(Spring)*

CEGR 2101. Civil Engineering Drawing. (2) Corequisite: CEGR 1102. An introduction to engineering drawing. Topics include isometric, oblique and perspective drawing; orthographic projection; section views and building construction plans. One hour of lecture and three laboratory hours per week. *(Fall)*

CEGR 2152. Measurements Laboratory. (2) Prerequisites: CEGR 2101 and STAT 2122. An introduction to laboratory and field data collection techniques. Instruction in data analysis, data presentation and report writing. Elements of plane surveying, basic theory and fundamental measurements. One hour of lecture and three laboratory hours per week. *(Spring)*

CEGR 3090. Special Topics in Civil Engineering. (1-4) This course will be devoted to specific new areas which are emerging in the various fields of civil engineering. The course will build upon and synthesize the knowledge the students have gained from the engineering science, mathematics and physical science stems of the core curriculum. May be repeated for credit. *(On demand)*

CEGR 3121. Structural Analysis. (3) Prerequisites: ESGR 3141 and MATH 2171. Corequisite: CEGR 2152. Analysis of statically determinate and indeterminate beams, trusses and frames to include shear and moment diagrams, rough deflected shapes and deflections. Influence lines and criteria for moving loads. Indeterminate analyses to include methods of consistent deflection, slope deflection and moment distribution. *(Fall)*

CEGR 3141. Environmental Engineering I. (3) Prerequisite: MATH 2171. Corequisites: CEGR 2152 and MEGR 3114. General overview of environmental problems. Topics in water resources engineering including: development of surface and groundwater sources, analysis of water collection, transmission and distribution systems, design of sanitary and stormwater drainage systems, and stormwater management. Introduction to water quality modeling. *(Fall)*

CEGR 3151. Environmental Laboratory. (2) Prerequisite: CHEM 1101L. Corequisite: CEGR 3141. Laboratory problems in environmental engineering. Emphasis on analysis and presentation of results as well as on the significance of results as they affect theory and/or practice. One hour of lecture and three laboratory hours per week. *(Fall)*

CEGR 3152. Transportation Laboratory. (2) Corequisite: CEGR 3161. Design of transportation systems including highways, airports, pipelines and mass transit; route layout, geometric design and earthwork calculations; computer-aided system simulation and evaluation. One hour of lecture and three laboratory hours per week. *(Spring)*

CEGR 3160. Surveying. (3) Prerequisite: CEGR 2152. Elements of plane surveying including taping, transit, level, stadia, plane table, topographic surveying and mapping, care and adjustment of instruments; error adjustments; area and earthwork computations; introduction to photogrammetry; and computer techniques. *(On demand)*

CEGR 3161. Transportation Engineering I. (3) Prerequisite: MATH 2141. Corequisite: CEGR 2152. Analysis of transportation facilities; planning, location and economic considerations, with special emphasis on land transportation. *(Fall)*

CEGR 3212. Computer Applications in Civil Engineering. (3) Prerequisite: senior standing in Civil Engineering. The application of the digital computer to various types of civil engineering problems. Examinations in depth of selected civil engineering problems. *(On demand)*

CEGR 3221. Structural Steel Design I. (3) Prerequisites: CEGR 3121 and ESGR 3141. Analysis and design of structural steel components with emphasis on the fundamental theories necessary for a thorough understanding of the design procedure. Design philosophies and types of steel structures. Columns, tension members and laterally supported beams are considered. General flexural theory including bending of unsymmetrical sections. Current AISC Specifications used. *(Fall)*

CEGR 3225. Reinforced Concrete Design I. (3) Prerequisites: CEGR 3121 and ESGR 3141. Analysis and design of reinforced concrete components with emphasis on fundamental theories. Mechanics and behavior of reinforced concrete. Flexural members to include singly and doubly reinforced beams of various cross sections (rectangular, T-beams, joists, one-way slabs and others). Shear in beams and columns. Short columns to include uniaxial and biaxial bending. Construction of short column interaction diagrams. Introduction to footings. Current ACI Specifications used. *(Fall)*

CEGR 3231. Engineering Economic Analysis. (3) Prerequisites: ECON 2102 and STAT 2122, or consent of Department. Economic analysis of engineering projects; value systems; economic decisions on capital investments and choice of engineering alternatives; new projects, replacement and abandonment policies; decision under risk and uncertainty. *(Spring)*

CEGR 3232. Urban Engineering. (3) Prerequisite: consent of instructor. An examination of those societal problems of metropolitan regions most amenable to engineering solutions. Current urban literature will be reviewed in seminar, and selected topics amenable to engineering analysis will be studied. Written reports will be presented. *(On demand)*

CEGR 3251. Concrete and Steel Laboratory I. (2) Prerequisites or corequisites: CEGR 3221 and CEGR 3225. Design of concrete mixes; testing of standard concrete cylinders, beams and columns. Testings of steel tensile members and beams. Analysis and design of simple structural systems. One hour of lecture and three laboratory hours per week. *(Fall)*

CEGR 3252. Geotechnical Laboratory. (2) Prerequisites or corequisites: ESGR 3141 and CEGR 3268. Demonstrations and experiments verifying theoretical bases of geotechnical engineering; cohesionless and cohesive soils. One lecture hour and three lab hours per week. *(Spring)*

CEGR 3268. Geotechnical Engineering. (3) Prerequisites: ESGR 3141 and CEGR 2152. Theoretical bases of geotechnical engineering to include shear, stress and strain in soils and failure of soils; foundation, permeability; seepage and settlement; retaining structures, slope stability and earth dams; soil-structure interaction; foundations. *(Fall)*

CEGR 3271. Systems and Design I. (3) Prerequisite: senior standing in Civil Engineering, consent of instructor and MATH 2171. Introduction to systems engineering techniques as applied to civil engineering problems. The application of analytical methods to the development and evaluation of engineering systems. Course stresses methodological considerations and engineering projects which are carried out by small groups of students. *(Fall)*

CEGR 3272. Systems and Design II. (3) Prerequisite: CEGR 3271. Continuation of CEGR 3271 systems techniques. Utilization of students' previous coursework and principles of CEGR 3271 to creatively investigate and produce alternative solutions for a comprehensive engineering project. Efforts will result in written and verbal class presentations. *(Spring)*

CEGR 3281. Professional Development. (2) Prerequisite: senior standing in Civil Engineering. A series of one-hour lectures by faculty and invited speakers. Instruction in the basic concepts of professionalism and the nature and purpose of engineering ethics. Offered on a *Pass/Fail* basis. *(Spring)*

CEGR 3695. Civil Engineering Cooperative Education Seminar. (1) Required of Co-op students during semesters immediately following each work assignment for presentation of engineering reports on work done the prior semester. *(Fall, Spring, Summer)*

CEGR 3890. Individualized Study. (Variable credit 1-3 hours.) Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. *(On demand)*

CEGR 3990. Undergraduate Research in Civil Engineering. (Variable credit 1-4 hours.) Prerequisite: consent of the Department. This course involves the independent study of a theoretical and/or experimental problem in a specialized area of Civil Engineering. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

CEGR 4141. Process Engineering. (3) (3G) Prerequisite: CEGR 3141 or consent of the Department. Applications of material and energy balance principles to the study of the chemical, biological and environmental engineering processes. Overview of applied biotechnology, engineering thermodynamics and kinetics. *(Fall)*

CEGR 4142. Environmental Engineering II. (3) (3G) Prerequisite: CEGR 3141. Analysis and design of water and wastewater treatment processes including: physical, chemical and biological treatment; and treatment and disposal of sludge. Computer-aided design of treatment systems. Control of toxic and hazardous wastes. *(Spring)*

CEGR 4162. Transportation Planning. (3) (3G) Prerequisite: CEGR 3161. Urban transportation considerations; travel characteristics of urban transportation systems; analysis of transportation-oriented studies; analytic methods of traffic generation, distribution, modal split and assignment; traffic flow theory. *(On demand)*

CEGR 4181. Human Factors in Traffic Engineering. (3) (3G) Prerequisite: CEGR 3161 or consent of department. Study of the driver's and pedestrian's relationship with the traffic system, including roadway, vehicle and environment. Consideration of the driving task, driver and pedestrian characteristics, performance and limitations with regard to traffic facility design and operation. *(On demand)*

CEGR 4183. Traffic Engineering Studies. (3) (3G) Prerequisite: CEGR 3161 or consent of department. Introduction to the traffic engineering studies most used by traffic engineers including data collection techniques, statistical analysis procedures, report writing and presentation. Two hours of lecture and two hours of laboratory per week. *(On demand)*

CEGR 4222. Structural Steel Design II. (3) (3G) Prerequisite: CEGR 3221. Analysis and design of structural steel components and systems with emphasis on the fundamental theories necessary for a thorough understanding of the design of complete structures. Compression members affected by local buckling, beams with lateral-torsional buckling, continuous beams and beam columns are covered. Welded and bolted connections. Current AISC Specifications used. *(Spring)*

CEGR 4224. Advanced Structural Analysis. (3) (3G) Prerequisite: CEGR 3121. A continuation of CEGR 3121. Fundamental and special methods of analysis of statically determinate and indeterminate structures. Topics include deflection theory, energy theory, variable cross-section analysis, multistory moment distribution. *(Spring)*

CEGR 4224. Advanced Structural Analysis. (3) (3G) Prerequisite: CEGR 3121. A continuation of CEGR 3121. Fundamental and special methods of analysis of statically determinate and indeterminate structures. Topics include deflection theory, energy theory, variable cross-section analysis, multistory moment distribution. *(Spring)*

CEGR 4226. Reinforced Concrete Design II. (3) (3G) Prerequisite: CEGR 3225. Analysis and design of reinforced concrete components and systems with emphasis on the fundamental theories necessary for a thorough understanding of concrete structures. Concentrically loaded slender columns, slender columns under compression plus bending. Wall footings and column footings. Analysis of continuous beams and frames. Total design project involving the analysis and design of a concrete structure. Current ACI Specifications used. *(Spring)*

CEGR 4262. Traffic Engineering. (3) (3G) Prerequisite: CEGR 3161 or consent of instructor. Operation and management of street and highway systems. Traffic control systems, traffic flow theory, and highway capacity. Evaluation of traffic engineering alternatives and the conduct of traffic engineering studies. *(Spring)*

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department. For course descriptions, see pages 369-371.

Department of Computer Science

Interim Chairperson: Lecturer Lejk; *Professors:* Allen, S. Chen, Epstein, Ras, Schell; *Associate Professors:* K. Chen, Michalewicz, Razavi, Wilkinson; *Visiting Associate Professor:* Gyires; *Assistant Professors:* Chu, Hadzikadic, Manohar, Mostafavi, Tavakoli; *Lecturers:* Frazier, Shaw; *Adjunct Professors:* Maitan, Nelson, Pawlak, Rasiowa, Xia

Computer Science is the term applied to areas of study centering on the organizational and structural properties of systems, arrays of symbols, and mechanical languages which find their application in the processing and communication of information. The computer scientist's concerns are:

- the organization and interaction of equipment constituting an information processing system,
- the development of software systems to control and communicate with equipment,
- the derivation and study of procedures and basic theories for the specification of processes, and
- the application of systems, software, procedures, and theories of computer science to other disciplines.

The Computer Science Department offers programs leading to three degrees: Bachelor of Arts, Bachelor of Science, and Master of Science. (See the *Graduate Section* of this *Catalog* for information on the M.S. degree.) Students at UNC Charlotte are prepared for their profession through a comprehensive program of courses, aided by some of the latest computer equipment available.

Cooperative Education in Computer Science. By participating in the Cooperative Education program, students in computer science may pursue their education along with alternating work experiences so that they may be better prepared to enter their chosen professional career. Interested students should contact the Department of Computer Science for more information.

BACHELOR OF ARTS

The Computer Science major leading to the Bachelor of Arts degree provides education and training for students who intend to pursue a career in some facet of computer information systems. Two programs are offered; a traditional four-year university program and a two-year program based on an Associate in Applied Science degree.

Four-Year Program

Students in the traditional four-year program may select a general curriculum or a concentration in information science.

General Curriculum. The general curriculum consists of a minimum of 42 hours in computer science courses, and either 17 or 15 hours of mathematics, depending on the mathematics option selected. Courses currently included are:

Computer Science: 1100P, 2111, 2113 or 2116, 2140, 2161, 2163, 3155, 3160, 3166, 3650, 3651, 3688, and six semester hours of approved computer science courses numbered 3000 or above;

Mathematics: 1141, 1142, 2164, 2165; or 1120, 1165, 2164, STAT 1220, 1223, 2122.

A component of related work must be included, consisting of 15 semester hours of approved non-computer science courses forming an integrated program of secondary strength, or nine semester hours of approved mathematics courses at the 3000 level or above.

Information Science Concentration. The four-year program with a concentration in information science consists of a minimum of 51 hours in computer science and 15 hours in mathematics. Courses currently included are:

Computer Science: 1100P, 2111, 2140, 2161, 2163, 2170, 3130, 3131, 3132, 3134/3153, 3152, 3155, 3160, 3166, 3650, 3688, and three semester hours of approved coursework numbered 3000 or above;

Mathematics: 1120, 1165, 2164, STAT 1220, 1223.

A component of related work must be included consisting of 18 semester hours of courses from the College of Business Administration. These currently include: ACCT 2122, 2122; ECON 2101, 2102; and two of the following: OPER 3100, MKTG 3110, FINN 3120, MGMT 3140.

Two-Year Program

The two-year program consists of modified junior and senior years and requires possession of an Associate in Applied Science (A.A.S.) degree in a related field. The program provides a concentration in Applications Programming which consists of 21 additional hours of computer science and 12 additional hours of mathematics. Courses currently included are:

Computer Science: 2140, 2161, 3160, 3166, 3650, 3688, and three semester hours of approved coursework numbered 3000 or above;

Mathematics: 1165, 2164 and STAT 1220, 1223.

This program requires that students would have met other degree requirements through their A.A.S. degree programs.

BACHELOR OF SCIENCE

The Computer Science major leading to the Bachelor of Science degree provides education and training for students who intend to pursue a computer science or computer engineering program.

General Curriculum. The General Curriculum in Computer Science consists of a minimum of 42 semester hours of computer science and 20 semester hours of mathematics courses numbered 1140 or above. These currently include:

Computer Science: 1100P, 2113 or 2116, 2140, 2141, 2161, 2163 or 2175, 3141, 3143, 3160, 3650, 3651, 3688, and six semester hours of approved computer science courses numbered 3000 or above; and

Mathematics: 1141, 1142, 2164, 2165, STAT 2122 and three semester hours of approved mathematics courses numbered 2000 or above.

Students working toward the B.S. degree must complete 14 semester hours of sciences, including Physics 2221, 2221L, 2231 and 2231L. A component of related work must be included, which consists of 15 semester hours of approved non-computer science courses forming an integrated program of secondary strength, or of nine semester hours of approved mathematics courses at the 3000 level or above.

Computer Engineering Concentration

The Computer Science major with a Computer Engineering emphasis consists of a minimum of 42 semester hours of computer science and 20 semester hours of mathematics courses numbered 1141 or above. These currently include:

Computer Science: 1100P, 2113 or 2116, 2140, 2161, 3143, 3155, 3650, 3651, 3688, CPGR 2181, 3181, 3182, 4181, and three semester hours of approved computer science courses numbered 3000 or above; and

Mathematics: 1141, 1142, 2164, 2165, 2171, STAT 2122.

Students working towards the B.S. degree with a Computer Engineering emphasis must also complete Physics 2221, 2221L, 2231, and 2241, and Chemistry 1101 and 1101L. A component of related

work must include 17 hours of Electrical Engineering courses 2111, 2112, 2152, 2181, 2182, and 3131. Economics 2101 or 2102 must also be taken. Technical electives must be approved by the department.

Academic Progression Requirements for Computer Science Majors

Lower Division. The lower division of the computer science program is essentially the first two years of study. Requirements are the same for all specializations within the Department.

Requirements for continuation in lower division:

1. An overall GPA of at least 2.0 and a GPA of at least 2.0 in all computer science courses.
2. Grades of *C* or better in CSCI 1100P, CSCI 2113, CSCI 2161, required 1000-level mathematics courses, and required laboratory sciences courses.
3. Students may not accumulate a total of more than three repeats in mathematics and lower-division computer science courses. In no case may a single course be repeated more than once without the approval of the Department Chairperson and the Dean of the College of Engineering.

Upper Division. The upper division of the computer science program is essentially the last two years of study in a departmental area of specialization. Requirements:

1. *Admission to the Upper Division:* A student may be admitted to the upper division upon completion of a minimum of 59 semester hours of lower-division courses, with a GPA of 2.0 or better including:
   (a) completion of all lower-division major courses with a GPA of 2.0 or better; lower division mathematics courses; and all freshman courses and
   (b) accumulation of not more than three repeats in mathematics and computer science courses.
2. Transfer students are normally admitted to the lower division of the bachelor's program in computer science.
3. Students who change their major into computer science are admitted to lower division only.
4. A student in lower division may, with departmental approval, take a maximum of nine hours of upper-division courses. In no case may a student in lower division take an upper-division course with an upper division course as a prerequisite.

Second degree candidates will be evaluated on an individual basis and may be admitted to the lower or upper division depending on the number of courses applicable to the computer science program. A GPA of 2.5 or better for the first degree will be required for admission.

Lower-Division Courses: CSCI 1100P, 2111, 2113, 2114, 2115, 2116, 2123, 2140, 2161, 2163, 2170.

Upper-Division Courses: all courses numbered over 3000.

Courses Open to Upper- and Lower-Division Students: CSCI 2141, 2175.

Discontinuance. A student who is deemed to be making unsatisfactory academic progress will be recommended for discontinuance from the computer science program. Some of the conditions under which students will be recommended for discontinuance include:

1. Failure to be admitted to the upper division.
2. Failure to satisfy any prerequisite course after one repeat of that course.
3. Two *F's* in any course in the program.
4. A grade point deficit of 14 or more points in computer science courses.
5. Two successive semesters with a cumulative GPA of less than 2.0 in computer science courses.
6. Three repeats in upper-division computer science courses.

The procedure for appeal of any discontinuance follows the standard policies of the College of Engineering.

COMPUTER SCIENCE MINOR

Requirements for the minor include completion of: CSCI 1100P, 2113 or 2116, 2140, 2161, 3141, and any one of CSCI 3160, 3162, or 3175. Also required is a mathematics core of three courses, either (a) MATH 1141, 2164, 2165; or (b) MATH 1120, STAT 1220 or 2122, and OPRS 2111 or STAT 2121.

CURRICULUM OUTLINE: B.A. DEGREE, GENERAL CURRICULUM

Freshman Year

CSCI 1100P	3	CSCI 2113 or 2116	3
MATH 1141*	4	MATH 1142*	4
ENGL 1101	3	MATH 2165	3
GOAL VI	3	GOAL VI	3
GOAL V	3	ENGL 1102	3

Sophomore Year

CSCI 2140	3	CSCI 2161	3
CSCI 2111	3	COMM 2105	3
MATH 2164*	3	GOAL III	3
ENGL 2116	3	GOAL V	3
GOAL IV	4	GOAL IV	4

Junior Year

CSCI 2163	3	CSCI 3155	3
CSCI 3688	3	CSCI 3160	3
STAT 2122*	3	Related Work	3
Related Work	6	GOAL IV	4
		Electives	3

Senior Year

CSCI 3xxx/4xxx	3	CSCI 3xxx/4xxx	3
CSCI 3650	3	CSCI 3651	3
CSCI 3166	3	Electives	6
Related Work	3	Related Work	3
Electives	3		

*A mathematics option consisting of MATH 1120, 1165 and 2164, and STAT 1220 and 1223 may be selected as an alternate to the math courses listed. If this alternate track is selected, the amount of electives increases by two (2) hours.

Total Hours..... 125

CURRICULUM OUTLINE: INFORMATION SCIENCE CONCENTRATION

Freshman Year

Fall		Spring	
CSCI 1100P	3	CSCI 2111	3
MATH 1120	3	MATH 1165	3
ENGL 1101	3	ENGL 1102	3
GOAL VI	3	GOAL III	3
GOAL IV	4	GOAL IV	4

Sophomore Year

Fall		Spring	
CSCI 2140	3	CSCI 2163	3
CSCI 2161	3	CSCI 2170	3
STAT 1220	3	STAT 1223	3
ENGL 2116	3	MATH 2164	3
GOAL IV	3	COMM 2105	3
		GOAL V	3

Junior Year

Fall		Spring	
CSCI 3152	3	CSCI 3130	3
CSCI 3166	3	CSCI 3155	3
CSCI 3688	3	CSCI 3160	3
ACCT 2121	3	ACCT 2122	3
ECON 2101	3	GOAL IV	3
GOAL V	3		

Senior Year

Fall		Spring	
CSCI 3131	3	CSCI 3132	3
CSCI 3650	3	CSCI 3134/3153	3
ECON 2102	3	CSCI 3651	3
Electives	5	Related Work	6*

*Two of: OPER 3100, MKTG 3110, FINN 3120, or MGMT 3140.

Total Hours..... 125

CURRICULUM OUTLINE: APPLICATIONS PROGRAMMING CONCENTRATION
(Requires Admission with an Associate in Applied Science Degree)

Junior Year

Fall		Spring	
CSCI 2140	3	CSCI 3160	3
CSCI 2161	3	CSCI 3166	3
MATH 1165	3	STAT 1220	3
GOAL IV	4	GOAL IV	4
GOAL V	3	GOAL VI	3

Senior Year

Fall		Spring	
CSCI 3650	3	CSCI 3xxx	3
STAT 1223	3	CSCI 3688	3
FORL 1201	4	MATH 2164	3
ENGL 2116	3	FORL 1202	4
COMM 2105	3	GOAL III	3

This curriculum is based on a transfer of a maximum of 64 semester hours from a two-year community college. Consult the Department for further information.

CURRICULUM OUTLINE: B.S. DEGREE, GENERAL CURRICULUM

Freshman Year

CSCI 1100P	3	CSCI 2113 or 2116	3
MATH 1141	4	MATH 1142	4
ENGL 1101	3	ENGL 1102	3
Science course	3	Science course	3
GOAL VI	3	GOAL III	3

Sophomore Year

CSCI 2140	3	CSCI 2141	3
CSCI 2161	3	CSCI 2163 or 2175	3
PHYS 2221	3	PHYS 2231	3
PHYS 2221L	1	PHYS 2231L	1
MATH 2164	3	GOAL VI	3
ENGL 2116	3	MATH 2165	3

Junior Year

CSCI 3688	3	CSCI 3160	3
CSCI 3xxx/4xxx	3	CSCI 3xxx/4xxx	3
STAT 2122	3	MATH 2xxx or 3xxx	3
Related Work	3	Related Work	3
GOAL V	3	GOAL V	3

Senior Year

CSCI 3141	3	CSCI 3143	3
CSCI 3650	3	CSCI 3651	3
Related Work	6	Related Work	3
Elective	3	Electives	3

Total Hours..... 121

CURRICULUM OUTLINE: COMPUTER ENGINEERING

Freshman Year

Fall		Spring	
ENGR 1100	1	CSCI 2113 or 2116	3
CSCI 1100P	3	MATH 1142	4
MATH 1141	4	ENGL 1102	3
ENGL 1101	3	PHYS 2221	3
CHEM 1101	3	PHYS 2221L	1
CHEM 1101L	1	GOAL III	3
GOAL VI	3		

Sophomore Year

Fall		Spring	
CSCI 2140	3	CPGR 2181	3
EEGR 2181	3	EEGR 2111	3
PHYS 2231	3	EEGR 2182	3
PHYS 2231L	1	PHYS 2241	3
MATH 2164	3	MATH 2165	3
MATH 2171	3		

Junior Year

Fall		Spring	
CSCI 2161	3	CSCI 3155	3
EEGR 2122	3	CSCI 3688	3
EEGR 2152	2	CPGR 3181	3
ECON 2101 or 2102	3	EEGR 3131	3
ENGL 2116	3	STAT 2122	3
GOAL V	3	GOAL V	3

Senior Year

Fall		Spring	
CSCI 3650	3	CSCI 3651	3
CPGR 3182	3	CSCI 3143	3
CPGR 4181	3	Tech. Electives	9
CSCI/CPGR 3xxx/4xxx	3		
Tech. Elective	4		

Total Hours..... 132

COMPUTER SCIENCE (CSCI) COURSE DESCRIPTIONS

Courses for Undergraduates

CSCI 1100. Algorithmic Languages I. (P) (3) Prerequisite: MATH 1100, 1101 or 1103 with a grade of *C* or better, or placement by the Department. Basic concepts and terminology of computers, problem solving with computers, programming techniques required to formulate and program various numerical and non-numerical algorithms, through study of higher-level programming languages, such as PASCAL (CSCI 1100P) or FORTRAN (CSCI 1100). (Credit not given for both CSCI 1100 and CSCI 1101.) *(Fall, Spring, Summer) (Evenings)*

Notes regarding sections of CSCI 1100 — Algorithmic Languages I:

CSCI 1100 is open to all majors except Computer Science majors.

CSCI 1100P is a required course for Computer Science majors and minors.

CSCI 1101. Introduction to Computer Concepts. (3) Prerequisite or corequisite: MATH 1100, 1101 or 1103. This is an introductory course for non-CSCI majors that covers various aspects of computer hardware and software, and surveys the application of computers in different fields-business, medicine, engineering, government, education, etc. PC-software (word processing, spreadsheets, and databases) is introduced by several projects/assignments. (Cannot be taken for credit if CSCI 1100 is taken for credit. This course is not the equivalent of CSCI 1100 as a prerequisite for other computer science courses.) *(Fall, Spring) (Evenings)*

CSCI 2050. Topics in Computer Science. (1-3) Prerequisite: consent of the Department. Topics in computer science selected to supplement the regular course offerings at the 2000 level. (May be repeated for credit with the consent of the Department.) *(On demand)*

CSCI 2111. Beginning Structured COBOL. (3) Prerequisite: CSCI 1100 or INFO 2130 or equivalent with a grade of *C* or better, or consent of the department. A study of COBOL and its use in file manipulations including structures, sorting, blocks, accessing of files, and transaction processing. Uses of file systems will be studied. *(Fall, Spring, Summer) (Evenings)*

CSCI 2112. Advanced Structured COBOL. (3) Prerequisites: CSCI 2111 or equivalent, or consent of the department. A continuation of the study of COBOL and its use in developing application programs and systems of programs. Emphasis on the development of programs to run in the interactive environment or batch programs in support of on-line processing. *(Spring) (Alternate Years) (Evenings)*

CSCI 2113. Procedure-Oriented Programming in PL/I. (3) Prerequisite: CSCI 1100 or equivalent with a grade of *C* or better, or consent of the Department. A study of the programming language PL/I and the principles of procedure-oriented programming. Block structure, data elements, stream and record I/O, dynamic program structure, compile time facilities in PL/I. *(Fall, Spring, Summer) (Evenings)*

CSCI 2114. Procedure-Oriented Programming in ALGOL. (3) Prerequisite: CSCI 1100 or equivalent with a grade of *C* or better, or consent of the Department. A study of the programming language ALGOL and the principles of procedure-oriented programming. Block structure, data elements, record I/O, dynamic program structure, pointers, strings, and job-related facilities. *(On demand)*

CSCI 2115. APL Programming. (3) Prerequisite: CSCI 1100 with a grade of *C* or better, or consent of the Department. The study of programming language APL. Datatypes, functions, operations, files, programming style, dynamic storage management. *(On demand)*

CSCI 2116. C Programming. (3) Prerequisite: CSCI 1100 with a grade of *C* or better or consent of the Department. A study of the programming language C. Data types, operators, functions, program structure and storage classes, exceptions, concurrent programming, preprocessor. *(Fall, Spring, Summer) (Evenings)*

CSCI 2123. Introduction to Numerical Methods. (3) Prerequisites: CSCI 1100 and MATH 1142. General concepts of scientific computing and their applications to such areas as non-linear equations, numerical integration, spline and polynomial interpolation, and initial value problems. *(On demand)*

CSCI 2140. Assembly Language, Machines, Systems. (3) Prerequisite: CSCI 1100P or equivalent with a grade of *C* or better. General principles of assembly languages and assembly language programming. Computer structure, addressing techniques, internal representations, assembly systems. *(Fall, Spring, Summer) (Evenings)*

CSCI 2141. Introduction to Systems Programming. (3) Prerequisite: CSCI 2140 with a grade of *C* or better. Advanced assembly language concepts, use and management of macro and subroutine libraries, debugging techniques, program segmentation, parameter passing, file access and control programming, device drivers and interrupt handlers, reentrant coding, coroutines. *(Fall, Spring, Summer) (Evenings)*

CSCI 2161. Data Structures. (3) Prerequisites: CSCI 1100 with a grade of *C* or better, and knowledge or two higher-level languages. Stacks, queues, arrays, strings, lists, trees, and graphs. Applications to recursion, garbage collection, storage compaction, tree traversals, accessing of information, design and analysis of algorithms. *(Fall, Spring, Summer) (Evenings)*

CSCI 2163. Introduction to File Processing. (3) Prerequisites: knowledge of a high-level language which supports random access file methods and CSCI 2161. A course to introduce concepts and techniques of structuring data on external storage devices; and to provide the foundation for applications of data structures and file processing techniques. *(Spring)*

CSCI 2170. Information Storage and Retrieval. (3) Prerequisite: CSCI 2161. Introduction to the concepts, principles and skills of information science. Discussion of the tools for analysis, storage and retrieval of information. Topics include: the need and uses of information, data collection, coding, storage and retrieval, information acquisition, processing, evaluation and display. *(Spring) (Evenings)*

CSCI 2175. Logic and Algorithms. (3) Prerequisites: CSCI 1100 and MATH 1141, or equivalent. An introduction to propositional calculus, predicate calculus, algorithms, Turing machines, computability, and logic design. *(Fall, Summer) (Evenings)*

Courses for Advanced Undergraduates

CSCI 3050. Topics in Computer Science. (1-3) Prerequisite: consent of the Department. Topics in computer science at the upper-division level. (May be repeated for credit as topics vary with the consent of the Department. *(On demand)*

CSCI 3102: Programming Languages. (3) Prerequisite: CSCI 2161. Formal definition of programming languages including specification of syntax and semantics. Evolution of programming languages and language design principles. Structural organization, control structures, data structures and types, name visibility, binding times, parameter passing modes, subroutines, coroutines, and tasks. Functioinal programming, list processing, logic programming, object-oriented programming systems. *(On demand)*

CSCI 3110. Compiler Construction. (3) Prerequisites: CSCI 2161 and 3102. Review of programming language structures, translation, loading, execution, and storage allocation. Compilation of simple expressions and statements. Organization of a compiler, including compile-time and run-time tables, lexical scan, syntax scan, object code generation, error diagnostics, object code optimization techniques and overall design. Use of compiler writing languages and boot strapping. *(On Demand)*

CSCI 3115. Design and Analysis of Algorithms. (3) Prerequisites: CSCI 2161 with a grade of *C* or better, and junior standing. Techniques and tools for the development of correct algorithms. Structured and modular programming, efficiency and correctness, testing, recursion, complexity, and heuristics. *(Fall, Summer) (Evenings)*

CSCI 3130. Human-Computer Interaction. (3) Prerequisite: CSCI 2163 or 2170. Introduction to the concepts of design of human-machine environment, with special emphasis on human-computer interaction. Topics include: analysis, creation and improvement of equipment and environment to make them compatible with human capabilities and expectation, analysis of the existing equipment with respect to its user friendliness and input/output capabilities. *(Spring) (Evenings)*

CSCI 3131. Human and Computer Information Processing. (3) Prerequisite: CSCI 2163 or 2170. Overview of methods people use to acquire, store and use the data they receive from the environment and their implementation of computers. Topics include: perception, pattern recognition, attention, memory, knowledge representation, language and problem solving. *(Fall) (Evenings)*

CSCI 3132. Information Systems. (3) Prerequisite: CSCI 2163 or 2170. Analysis, design, implementation and evaluation of information systems. Topics include: techniques of manipulating data, behavioral component of dealing with the user and integration of technology, procedures, and people. *(Spring) (Evenings)*

CSCI 3134. Text and Image Processing. (3) Prerequisite: CSCI 2163 or 2170. Overview of basic techniques for storage and retrieval of textual and image data. Topics include: document data bases, text analysis and automatic indexing, pictorial data representation and manipulation algorithms, managing text, facts, and pictorial data in a mixed data base. Reveiw of specific applications such as hypertext, bibliographic information systems, medical and geographical data base systems. *(Spring) (Alternate Years) (Evenings)*

CSCI 3141. Computer Organization. (3) Prerequisite: CSCI 2140 with a grade of *C* or better, or consent of the Department. Basic digital components, data representations, machine control flow, accessing, transfer and I/O functions. Introduction to multilevel machines, microprogramming concepts, survey of various computer architectures. *(Fall, Spring) (Evenings)*

CSCI 3143. Operating Systems. (3) Prerequisite: CSCI 3141 or CPGR 3182. Introduction to multiprogramming operating systems. Process synchronization and management of memory, devices, and files; performance evaluation. *(Spring) (Evenings)*

CSCI 3152. Symbolic Programming. (3) Prerequisite: CSCI 2161. Introduction to the basic concepts of symbolic programming with emphasis on the Lisp and Prolog programming languages. Some knowledge of engineering languages will be included. Programming examples include implementation of some basic concepts such as heuristic searching, symbolic algebra, language parsing and theorem proving. *(Fall) (Evenings)*

CSCI 3153. Introduction to Artificial Intelligence. (3) Prerequisite: CSCI 3152. Introduction to basic concepts of artificial intelligence. Topics include: defining the problem as a state space search, production systems, heuristic search, basic problem-solving methods, game playing, knowledge representation using predicate logic, semantic nets, frames, and scripts, nonmonotonic reasoning, statistical and probabilistic reasoning. *(Spring) (Alternate Years) (Evenings)*

CSCI 3155. Software Engineering. (3) Prerequisite: CSCI 2161 or consent of the Department. The system development cycle is examined in detail from the aspects of software engineering. Current tools and techniques of systems design-data dictionary, data flow diagrams, structured walkthroughs, and capacity planning will be taught and presented in conjunction with case studies and class problems. *(Spring) (Evenings)*

CSCI 3156. Structured Systems Analysis and Design. (3) Prerequisite: CSCI 2161 or consent of the Department. Structured systems development. Strategies and techniques of structured analysis and structured design to produce logical methodologies for dealing with complexity in the development of information systems. *(Fall) (Spring)*

CSCI 3160. Data Base Design and Implementation. (3) Prerequisite: CSCI 2161 with a grade of *C* or better. Logical and physical data base organization, data models, design issues, and secondary storage considerations. Emphasis on actual participation in the design and implementation of data bases. *(Fall, Spring) (Evenings)*

CSCI 3162. Data Communications and Distributed Processing. (3) Prerequisites: CSCI 2141 with a grade of *C* or better, and two higher-level computer languages. Interface standards and protocols, hardware standards, common carrier limitations, modems and multipliers, circuit, message and packet switching, datagrams and virtual circuits, error detection, text compression, virtual terminals. *(Fall, Spring) (Evenings)*

CSCI 3166. Distributed Computer Information Systems. (3) Prerequisite: Knowledge of a high level language which supports random access file methods or consent of the Department. Distributed vs. centralized processing. Data communications; speed; capacity, media, protocols. Network architectures. Distribution of data, computer power, and support. Evaluation of alternatives. Case studies. *(Fall)*

CSCI 3175. Introduction to Theory of Computation. (3) Prerequisite: CSCI 2175. Finite automata; context-free languages; Turing machines; recursive functions; Church's thesis; unsolvable problems; computational complexity. *(Spring) (Evenings)*

CSCI 3650. Senior Project. (3) Prerequisites: senior standing, and at least two CSCI 31xx/41xx courses with a grade of *C* or better, or consent of the Department. An individual or group project in the teaching, theory, or application of computer science under the direction of a faculty member. Projects must be approved by the Department before they can be initiated. *(Fall, Spring)*

CSCI 3651. Senior Project. (3) Prerequisite: CSCI 3650. A continuation of CSCI 3650. *(Fall, Spring)*

CSCI 3688. Computers and Their Impact on Society. (W) (3) Prerequisites: junior standing and consent of the Department. A study of current topics (software piracy, hacking, professional conduct) in computer science and the impact of computers on various subsets (home, government, education) of society. *(Fall, Spring, Summer) (Evenings)*

CSCI 3690. Seminar. (1-6) Prerequisite: consent of the Department. May be repeated for credit. *(Fall, Summer)*

CSCI 3691. Seminar. (1-6) Prerequisite: consent of the Department. May be repeated for credit. A continuation of CSCI 3690. *(On demand)*

CSCI 3695. Computer Science Cooperative Education Seminar. (1) Required of Co-op students during semester immediately following each work assignment for presentation of reports on work done the prior semester. *(Fall, Spring, Summer)*

CSCI 3699. Senior Seminar. (1-3) Prerequisites: senior standing and consent of the Department. Each participant will prepare a lecture on a topic in computer science. Emphasis will be on communication of technical information as well as on content of the presentations. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

CSCI 40XX. Topics in Computer Science. (3) (3G) *(On demand)*

CSCI 4170. Project Management. (3) (3G) Prerequisite: CSCI 3155 or 3156, or consent of Department. Classical and matrix organization techniques for project management. The system development cycle. Project control: major documents and milestones; phases, functions, and key documents. Impact of project size and project subject on techniques and procedures. *(Spring) (Alternate Years)*

Courses for Graduate Students and Advanced Undergraduates

Following are courses designed primarily for graduate students, which may be taken by advanced undergraduates for undergraduate credit. See pages 335-336 for complete course descriptions.

CSCI 50XX. Topics in Computer Science. (3) (3G)

CSCI 5102. Survey of Programming Languages. (3) (3G)

CSCI 5110. Programming Languages and Compilers. (3) (3G)

CSCI 5111. Advanced Topics in Programming Languages and Compilers. (3) (3G)

CSCI 5112. Software Systems Design and Implementation. (3) (3G)

CSCI 5130. Computer Graphics—Design of Interactive Systems. (3) (3G)

CSCI 5131. Simulation. (3) (3G)

CSCI 5141. Computer Organization and Architecture. (3) (3G)

CSCI 5150. Artificial Intelligence. (3) (3G)

CSCI 5156. Topics in Computer-Aided Instruction. (3) (3G)

CSCI 5170. Formal Languages and Automata. (3) (3G)

CSCI 5171. Logic Programming. (3) (3G)

CSCI 5175. Computability and Complexity. (3) (3G)

COMPUTER SCIENCE/ENGINEERING (CPGR) COURSE DESCRIPTIONS

CPGR 2181. Introduction to Computer Engineering. (3) Prerequisite: CSCI 2140 with a grade of *C* or better, or consent of the department. A study of the interrelationship between hardware and software in computer engineering. Introduction to UNIX and C, combinational and sequential logical operations in software, logic simulation, and analysis of hardware and software implementations. *(Spring)*

CPGR 3181. Computer Engineering Laboratory. (3) Prerequisites: EEGR 2182 with a grade of *C* or better, or consent of the department. Introduction to IC Families. Use of oscilloscope, logic analyzer and microcomputer development system. Experiments involve combinational and sequential circuits, clocks and I/O devices. *(Spring)*

CPGR 3182. Computer Architecture and Organization. (3) Prerequisite: EEGR 2181 or equivalent or consent of the department. Introduction to computer architecture; analysis and design of digital computers; arithmetic algorithms and processors; control and timing systems; memory and system organization; parallel processing. *(Fall) (Evening)*

CPGR 4181. Microcomputer Interfacing. (3) (3G) Prerequisite: CPGR 3182 or EEGR 3181 or CSCI 3141, or permission of the department. Signal conditioning, A/D conversion, noise, transmission line effects, signal processing, D/A conversion and serial/parallel interfaces. *(On Demand)*

CPGR 5182. Computer Arithmetic. (3) (3G) Prerequisite: permission of the Department. Principles, architecture and design of fast two oper and adders, multioperand adders, standard multipliers and dividers. Cellular array multipliers and dividers. Floating point processors, BCD and excess three adders, multipliers and dividers. *(On Demand)*

Department of Electrical Engineering

Chairperson: Professor Greene; *Distinguished Professor Emeritus:* Barnette; *Distinguished Professor:* Nicollian; *Professors:* Lukic, Tsu, Turlik, Wayne; *Associate Professors:* Coleman, Daneshvar, Kakad, Makki, Tranjan, Smith; *Assistant Professors:* Doty, Feldman, Middleton, Miri, Trumper, Zhou; *Lecturer:* Jenkins

The Electrical Engineering Department provides instruction and research in areas of electrical and computer engineering such as electronics, microelectronics, electric power systems, system and control theory, digital systems, signal and image processing, nano-fabrication and communications.

The Department offers a Bachelor of Science in Electrical Engineering (B.S.E.E.) degree. A six-semester sequence of courses emphasizing circuits and systems forms the core of the curriculum. These courses are designed to develop the concepts, design and analysis techniques fundamental to the various areas of specializations. Emphasis is placed on the utilization of the computer in all courses throughout the curriculum.

The laboratory courses are designed to serve three purposes: (1) to teach the basic techniques of instrumentation; (2) to develop skills in communications; and (3) to relate the analytical methods developed in the classroom to the performance of real physical systems.

The curriculum requirements are flexible enough so that a student may synthesize a program of study to achieve his or her particular objectives and his or her desired degree of specialization. This is done through the use of the technical electives, with the guidance and approval of the student's academic adviser and approval of the Department chairperson. If further specialization in a particular area is desired, the student may be encouraged to seek an advanced degree.

Graduate studies in electronics, microelectronics, computer systems, signal and image processing, communications, and power and control systems are offered by the Department at both the master's and doctoral (cooperative Ph.D.) levels. (See the Graduate School section of this *Catalog*.)

The program in Electrical Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.)

A major in Electrical Engineering leading to the B.S.E.E. degree consists of a total of 132 credit hours. These requirements are:

English	6
Humanities and Social Science Electives	12
Mathematics	17
Physics	10
Chemistry	4
Science Elective	3
Freshman Engineering	1
Engineering Science	3
Mechanical Engineering	3
Departmental Requirements	58
Technical Electives	12
Economics	3
	132

The social science and humanities electives must be chosen to satisfy Goals III, V and VI of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and must complement the student's overall educational plan.

The mathematics elective may be selected from STAT 2122, MATH 2164, or a 3000-level mathematics course approved by the Department.

The technical electives are chosen by students in consultation with their academic adviser. Students can use these electives to (1) obtain some breadth within electrical engineering by choosing additional advanced courses; (2) obtain significant depth within a particular area of electrical engineering; (3) prepare for graduate work in electrical engineering. The technical electives must contain at least nine hours of coursework dealing with engineering science, analysis, synthesis or design, with the remaining three hours being in certain engineering, science, mathematics, business or computer science courses. See department guidelines for selection of these courses.

All electrical engineering majors must satisfactorily complete the Freshman Engineering course, ENGR 1100, during their first semester in attendance in electrical engineering at UNC Charlotte.

All junior-level core courses must be satisfactorily completed prior to enrolling in the senior project courses.

CURRICULUM OUTLINE: B.S.E.E. DEGREE

Freshman Year

ENGR 1100 Intro. to Engineering 1	EEGR 1102 Computer Language I & Graphics 2
MATH 1141 Diff. & Integral Calculus I 4	MATH 1142 Diff. & Integral Calculus II.....4
CHEM 1101 Prin. of Chemistry I 3	PHYS 2221 Dynamics.....3
CHEM 1101L Prin. of Chemistry Lab I 1	PHYS 2221L Experimental Physics I.....1
ENGL 1101 English Composition.....3	ENGL 1102.....3
Humanities or Social Science.....3	Humanities or Social Science.....3

Sophomore Year

EEGR 2111 Network Theory I 3	EEGR 2112 Network Theory II 3
EEGR 2101 Computer Language II 2	EEGR 2152 Laboratory I.....2
EEGR 2181 Switch. Theory & Logic Design I 3	ESGR 2143 Statics & Strength of Materials.....3
PHYS 2231 Electricity & Magnetism 3	PHYS 2241 Intro. to Modern Physics 3
MATH 2171 Differential Equations 3	MATH 2141 Diff. & Integral Calculus III.....3
ECON 2101 or 2102 Micro or Macro Economics.....3	Humanities or Social Science.....3

Junior Year

EEGR 3111 System Analysis I 3	EEGR 3112 System Analysis II.....3
EEGR 3151 Laboratory II 2	EEGR 3152 Laboratory III 2
EEGR 3101 Comp. Utilization in Egr. 3	EEGR 3142 Electromagnetic Devices 3
EEGR 3131 Fund. of Electronics & Semiconductors 3	EEGR 3132 Electronics.....3
EEGR 3121 Intro. to Electromagnetic Fields 3	EEGR 3122 Electromagnetic Waves.....3
Humanities or Social Science.....3	Mathematics Elective.....3
EEGR 3199 Professional Development 0	EEGR 3199 Professional Development 0

Senior Year

EEGR 4111 Control Systems I 3	EEGR 4112 Control Systems II 3
EEGR 3251 Senior Design I 2	EEGR 3252 Senior Design II.....3
EEGR 4xxx 3	MEGR 3111 Thermodynamics I 3
Technical Elective 3	Technical Elective 3
Technical Elective 3	Technical Elective 3
Science Elective 3	EEGR 3199 Professional Development 1
EEGR 3199 Professional Development 0	

ELECTRICAL ENGINEERING (EEGR) COURSE DESCRIPTIONS

Courses for Undergraduates

EEGR 1102. Computer Language and Graphics. (2) Corequisite or prerequisite: MATH 1141. Introduction to the concepts and techniques of engineering graphics using computational methods and computer graphics. Introductory computer programming using electrical engineering applications. *(Fall, Spring, Summer)*

EEGR 2101. Computer Language II. (2) Prerequisite: EEGR 1102 with a grade of *C* or better. Introduction to a second high level language, algorithms, flowcharting, use of engineering software packages, engineering subroutines and program documentation. *(Fall, Spring)*

EEGR 2111. Network Theory I. (3) Corequisite: EEGR 2101 or CSCI 2113. Prerequisite or corequisite: PHYS 2231 and MATH 2171. Introduction to Kirchoff's and terminal equations. Circuit analysis techniques and network theorems. Singularity functions and signals. Transient and natural response of first and second order networks. State variable analysis. *(Fall, Spring) (Evenings)*

EEGR 2112. Network Theory II. (3) Prerequisite: EEGR 2111 with a grade of *C* or better and MATH 2171. Continuation of EEGR 2111. Introduction of sinusoidal steady state. Time frequency domain analysis. Power and energy. Two port networks. Fourier series. Introduction to Fourier and Laplace transforms. *(Fall, Spring, Summer) (Evenings)*

EEGR 2151. Basic Electrical Engineering Laboratory. (1) Prerequisite or corequisite: EEGR 2163. Principles and operation of electrical circuits, basic electronic devices and energy conversion devices. Not open to Electrical Engineering majors. Three laboratory hours a week. *(On demand)*

EEGR 2152. Laboratory I. (2) Prerequisite: ENGL 1101. Prerequisite or corequisite: EEGR 2112. The first in a series of laboratory-oriented courses designed to develop an understanding of the principles and theory of parameter measurement and instrumentation. Instruction in the use of laboratory equipment and development and application of experimental techniques. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

EEGR 2161. Basic Electrical Engineering I. (3) Corequisite or prerequisite: PHYS 2231. Fundamental concepts and methods of analysis used in electrical engineering. Topics include: terminal characteristics of devices, analysis of D.C. and A.C. circuits, elementary operation of electronic devices. Not open to Electrical Engineering majors. *(Fall) (Evenings)*

EEGR 2162. Basic Electrical Engineering II. (3) Prerequisite: EEGR 2161. Continuation of EEGR 2161 covering electronics, magnetic fields, electromagnetic and electromechanical devices. Not open to Electrical Engineering majors. *(Spring) (Evenings)*

EEGR 2163. Electrical Engineering Survey. (3) Prerequisite: MATH 1142. Corequisite: PHYS 2231. Fundamental concepts and methods of analysis used in electrical engineering. Topics include: terminal characteristics of devices, analysis of D.C. and A.C. circuits, elementary operation of electronic devices and electromechanical energy conversion devices. Not open to Electrical Engineering majors. *(On demand)*

EEGR 2181. Logic System Design I. (3) Prerequisite or corequisite: EEGR 1102 or CSCI 1100 or permission of Department. Introduction to Boolean algebra; mixed logic; design of combinational circuits; introduction to sequential systems; MSI building blocks; includes laboratory design projects. *(Fall, Spring)*

EEGR 2182. Logic System Design II. (3) Prerequisite: EEGR 2181 with a grade of *C* or better or permission of the Department. Continuation of EEGR 2181. Multi-input and output controllers using top down design; logic design using MSI and LSI. Bit-slice controllers; including laboratory design project and techniques. *(Spring, Summer)*

EEGR 3090. Special Topics in Electrical Engineering. (1-4) Prerequisite: consent of the Department. The course builds upon and synthesizes knowledge from the engineering science, mathematics and physical sciences stem of the core curriculum. The specific topics teach engineering analysis, synthesis and design, while simultaneously affording an opportunity for the students to investigate an area of specialization. May be repeated for credit. *(On demand)*

EEGR 3101. Computer Utilization in Electrical Engineering. (3) Prerequisite: EEGR 2112 or EEGR 2152 with a grade of *C* or better or consent of the Department. The application of the digital computer to engineering analysis and design problems. Computer-aided analysis and design. Introduction to language and applications. *(Fall, Spring)*

EEGR 3111. System Analysis I. (3) Prerequisite: EEGR 2112 with a grade of *C* or better. Analysis of networks under transient and steady state conditions. Topological and matrix formulation techniques used in network analysis. Transient and steady state analysis. State variable techniques. Transform methods. Sinusoidal steady state. Network theorems. *(Fall, Spring)*

EEGR 3112. System Analysis II. (3) Prerequisite: EEGR 3111 with a grade of *C* or better. A continuation of EEGR 3111 emphasizing system response characteristics in the frequency domain. Introduction to techniques of analysis of continuous and discrete systems. *(Spring, Summer)*

EEGR 3121. Introduction to Electromagnetic Fields. (3) Prerequisite: EEGR 2112 with a grade of *C* or better. A study of electric and magnetic fields using the vector formulation. Vector analysis. Electrostatics: potential functions, dielectrics, capacitance, energy and forces associated with electric fields, solution of Laplace's and Poisson's equations. Magnetostatics: vector potential functions, Lorentz forces, hysteresis, magnetic polarization and induction, and energy. Gauss's, Ampere's, Faraday's laws, etc., leading to the Maxwell's equations. *(Fall, Spring)*

EEGR 3122. Electromagnetic Waves. (3) Prerequisite: EEGR 3121 with a grade of *C* or better. A study of Maxwell's equations, transmission line theory, plane waves in media, propagation of electromagnetic waves in various media. The phenomena of reflection and refraction at interfaces of two dissimilar materials. Guided electromagnetic waves in coaxial cables and waveguides. *(Spring, Summer)*

EEGR 3131. Fundamentals of Electronics and Semiconductors. (3) Prerequisite: EEGR 2112 with a grade of *C* or better. Study of the fundamental concepts of the theory and applications of semiconductor devices. Diode characteristics and applications, including clipping and rectifier circuits. Transistor fundamentals. D.C. biasing and stabilization. Small-signal analysis. Field-effect transistors. Operational amplifier fundamentals. *(Fall, Spring)*

EEGR 3132. Electronics. (3) Prerequisite: EEGR 3131 with a grade of *C* or better. Low and high-frequency analysis of transistor amplifiers. Multistage and feedback amplifier design. Stability and oscillation. Operational amplifier design and applications. *(Spring, Summer)*

EEGR 3134. Industrial Electronics. (3) Prerequisite: EEGR 3132 with a grade of *C* or better. High power solid state circuits. Topics include choppers, phase controlled rectifiers, triggering devices, inverters and dual converters, limiting and regulating circuits. *(Spring)*

EEGR 3142. Electromagnetic Devices. (3) Prerequisite: EEGR 3121 with a grade of *C* or better. Principles of operation and basic design features of electromechanical energy converters. The role of the magnetic field in transformers and electrical machines. Generation of induced voltages. Electromagnetic torque development. Speed control. Circuit models and machine performance. *(Spring, Summer)*

EEGR 3151. Laboratory II. (W) (2) Prerequisite: EEGR 2152 with a grade of *C* or better. Prerequisite or corequisite: EEGR 3111. Generating, measuring and recording devices and evaluation of their performance. Use of instrumentation to monitor operating systems and to determine the characteristics and behavior of physical devices. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

EEGR 3152. Laboratory III. (W) (2) Prerequisite: EEGR 3151 with a grade of *C* or better. Prerequisite or corequisite: EEGR 3112. Continuation of EEGR 3151 emphasizing the experimental analysis and design problems. Modeling and model evaluation. One hour of lecture and three laboratory hours per week. *(Spring, Summer) (Evenings)*

EEGR 3181. Computer Organization and Microprogramming. (3) Prerequisite: EEGR 2182 with a grade of *C* or better or permission of Department. Microcomputer development and architecture, microprogramming, chip-slice microprocessors. *(Fall, Spring)*

EEGR 3182. Digital Logic Design. (3) Prerequisites: EEGR 2181 and 3131, both with a grade of *C* or better. Bipolar and field-effect transistors, switching characteristics, device models, logic families. Memory devices, one-shots, Schmitt triggers, logic gates, drivers. Use of logic analyzers. *(Spring, Summer)*

EEGR 3183. Programming Languages. (3) Prerequisite: CSCI 2161. Topics include structure of simple statements and algorithmic languages, list processing, manipulation and text editing, linear-time parsers/interpreters/compilers. Emphasis on application of these concepts to engineering systems including programmable logic controllers and mini/micro computers as process controllers. *(On demand)*

EEGR 3199. Professional Development. (0) The purpose of this course is to broaden the student's perception of engineering as a career through participation in various activities related to the engineering profession. Activities consist of attendance at professional society meetings, active participation in student organizations, attendance at visiting lectures and seminars, etc. Course requirements are spread over a two-year period. Students will write two comprehensive reports, each of which concerns one of the above topics. Students must schedule this course during each of the three semesters prior to their last for zero credit and for one credit on a *Pass/No Credit* basis during their final semester. Satisfactory completion of this course is required for graduation for all Electrical Engineering majors. *(Fall, Spring)*

EEGR 3251. Senior Design I. (W) (2) Prerequisite: EEGR 3152 with a grade of *C* or better. Corequisite: senior standing in engineering. A project-oriented course stressing the planning and design of experiments to support the student's project. Formation of the design problem and specifications. *(Fall)*

EEGR 3252. Senior Design II. (W) (3) Prerequisite: EEGR 3251 with a grade of *C* or better. A continuation of EEGR 3251 consisting of project development and analysis, culminating in a written and oral presentation. *(Spring)*

EEGR 3695. Electrical Engineering Cooperative Education Seminar. (1) Required of Co-op students during semesters immediately following each work assignment for presentation of engineering reports on work done the prior semester. *(Fall, Spring, Summer)*

EEGR 3890. Individualized Study. (1-3) Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. May be repeated for credit. *(On demand)*

EEGR 3990. Undergraduate Research. (1-4) Prerequisite: consent of the Department. This course involves the independent study of theoretical and/or experimental problems in the specialized area of engineering analysis and design. The student can pursue some particular area or problem to a depth much greater than can be undertaken within the scope of existing courses. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

EEGR 4111. Control Systems Theory I. (3) (3G) Prerequisite: EEGR 3112 with a grade of *C* or better. Transfer functions, block diagrams and signal flow graphs. Feedback control system characteristics. The performance and stability of feedback systems using root locus and frequency response methods. Time domain analysis of control systems. The design and compensation of control systems. *(Fall)*

EEGR 4112. Control Systems Theory II. (3) (3G) Prerequisite: EEGR 4111 with a grade of *C* or better. State space techniques and useful state space methods. System stability. Controllability and observability of linear systems. The formulation of the state equations for discrete-time systems and the analysis of these systems by matrices. Analysis of nonlinear systems. Optimal control systems studies. *(Spring)*

EEGR 4113. Modeling and Analysis of Dynamic Systems. (3) (3G) Prerequisite: EEGR 3112 or permission of the Department. Models and dynamical properties of mechanical, thermal, and fluid systems, utilizing by analogy the properties of electrical circuit theory. Emphasis on the formulation of circuit models and the development of terminal equations of system components. Dynamic response to step, pulse, and sinusoidal driving functions using Laplace transforms. Sinusoidal steady-state and frequency response of systems. *(On demand)*

EEGR 4114. Topological Aspects of Circuit Theory. (3) (3G) Prerequisite: EEGR 3112 or permission of the Department. Topological analysis of passive and active networks. Application of topology to switching network. Flow graph techniques in systems analysis. Topological synthesis and other applications. *(On demand)*

EEGR 4121. Antennas. (3) (3G) Prerequisite: EEGR 3122 with a grade of *C* or better or permission of the Department. Radiation into free space, the point source, thin linear antenna, arrays of linear elements, aperture antennas, impedance, methods of feeding, matching and termination. Antenna systems. *(Fall)*

EEGR 4122. Acoustics. (3) (3G) Prerequisite: EEGR 3122 or PHYS 4231. Vibrations and simple vibrating systems; radiating systems; plane waves of sound; dynamic analogies, microphones and other acoustic transducers; acoustic measurements. *(On Demand)*

ENGR 4125. Fundamentals of Optical Engineering. (3) (3G) Prerequisites: EEGR 3122 and PHYS 2241 or permission of the department. The engineering aspects and applications of modern optics. Optical communications, optical signal and data processing, principles of integrated optics. Fiber optical communications. Fast-Fourier transforms and diffraction theory applied to computed holograpy, computer tomography and optical processing. *(On demand)*

EEGR 4131. Linear Integrated Electronics. (3) (3G) Prerequisite: EEGR 3132 with a grade of *C* or better. Application of integrated circuit devices to the generation, control and processing of analog signals. Power supply regulators, analog switches, waveform generators, and active filters. Modulation and demodulation. *(Fall)*

EEGR 4141. Power System Analysis I. (3) (3G) Prerequisite: EEGR 3142 with a grade of *C* or better. Representation of power system components for analysis studies. Transmission line parameters. Network equations. Load flow analysis and numerical methods. *(Fall)*

EEGR 4142. Power System Analysis II. (3) (3G) Prerequisite: EEGR 4141 with a grade of *C* or better. Economic operation of power systems. Short circuit studies. Symmetrical components. Transient stability analysis. *(Spring)*

EEGR 4143. Electrical Machinery. (3) (3G) Prerequisite: EEGR 3142 with a grade of *C* or better. Advanced theory of transformers and rotating. Machines; harmonic and saturation effects on machine performance. Unbalanced operation and transient conditions. *(On demand)*

EEGR 4151. Introduction To Robotics. (3) (3G) Prerequisites: EEGR 3101 or equivalent. Modeling of industrial robots including homogeneous transformations, kinematics, velocities, static forces, dynamics, computer animation of dynamic models, motion trajectory planning, and introduction to vision, sensors and actuators (dual-listed with MEGR 4127). *(Fall)*

EEGR 4182. Digital System Testing. (3) (3G) Prerequisite: EEGR 2181 with a grade of *C* or better or permission of Department. System testing; Boolean difference; D-algorithm; checking experiments; redundancy, computer-aided digital test systems. *(Spring)*

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department. For complete course descriptions, see pages 372-374.

Department of Engineering Technology

Chairperson: Associate Professor Braun; *Professor:* Liu; *Associate Professors:* Christie, Mobley, Priebe, Shelnutt, Wang, Willis; *Assistant Professors:* Blue, Chaffin, Ferman, Kocak, Patten; *Visiting Assistant Professor:* Barry; *Lecturers (Part-time):* Babaie, Colatz, Cornelius, Gough, Meachem, Philippoulos, Ratchford, Raymond, Richardson, Robinson, Russell, Safar, Silver, Schmucker, Warren, Zamani

Engineering and technical education have undergone considerable change in the last 25 years. The complexities of space exploration, nuclear power, communications systems, environmental control, information processing, transportation systems and manufacturing have demanded a great increase in the involvement of professional engineers in theoretical and analytical work. This has resulted in a much greater emphasis upon research and development, science and mathematics in traditional engineering curricula. At the same time, after the more complex devices and systems have been engineered, the design, development and operation require the sophisticated knowledge and skills of practitioners of what might be called the "applied engineering sciences." Programs dedicated to fulfilling this need are now developing rapidly over the United States. The aim and content of these programs are distinctly different from professional engineering curricula.

To provide the appropriate distinction from both theoretical-professional engineers and from engineering technicians who are graduated from the two-year technical institutes, the designation "engineering technologist" is being used throughout the United States for the graduates of four-year applied engineering or "engineering technology" curricula.

The two-year technical institute programs in North Carolina and in many other states provide an excellent foundation for four-year baccalaureate engineering technology curricula. Therefore, the Engineering Technology program at UNC Charlotte is limited to the junior and senior years, and an Associate in Applied Science degree is required for admission.

UNCC offers four curricula leading to a Bachelor of Engineering Technology (B.E.T.) degree: **Civil Engineering Technology** (emphases on general Civil and Construction); **Electrical Engineering Technology** (emphases on Electronics and Computer/Electronics); **Manufacturing Engineering Technology** (emphases on General Manufacturing Engineering Technology and on Applied Optical/Precision Manufacturing Engineering Technology); and **Mechanical Engineering Technology** (emphases on General Mechanical and Industrial). The tracks of study in Civil Engineering Technology, Electrical Engineering Technology, and Mechanical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology and are available through both day and evening studies.

BACHELOR OF ENGINEERING TECHNOLOGY (B.E.T.)

Requirements for Admission. A student who has graduated from a technical institute or the technical division of a junior college must meet the following requirements to enter the Engineering Technology program at UNC Charlotte:

1. An Associate in Applied Science degree in one of the following fields:

   Architectural, Automation, Building Construction, Civil, Construction, Computer, Controls, Design and Drafting, Electrical, Electronics, Surveying, Environmental, Industrial, Instrumentation, Manufacturing, Mechanical, Optical, Robotics, or Surveying Technololgy.

2. An overall grade point average of at least 2.2 except for the requirement of at least 2.5 for entry into the Manufacturing Engineering Technology track (based on the 4.0 system) on all courses taken at the technical institute, and

3. Satisfactory completion of the prerequisite courses for the track which the student plans to enter (see pages 275-276).

There is considerable variance in the contents of technical institute programs throughout the United States. Should this result in entrance deficiencies, the student can usually remove these deficiencies at any technical institute or community college in Charlotte prior to admission to UNCC, or during the first year at UNCC.

Residence Requirements. A student must earn the last 30 semester hours of credit toward the degree and the last 12 semester hours of work in the major at UNCC to satisfy residence requirements.

Requirements for Continuance. In order to be eligible for the B.E.T. degree, students must attain a minimum GPA of 2.0 in: (1) all courses attempted at UNCC, and (2) all courses attempted in the college of Engineering. A student may not accumulate a total of more than *three* (3) repeats of College of Engineering courses in the upper division. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

Course Requirements. Prerequisite courses for entering the Engineering Technology program, normally taken at a technical institute or junior college, are listed on the pages that follow. Coursework that must be completed at UNC Charlotte is listed in the Engineering Technology curricula that follow.

Disenrollment. Students who do not meet published prerequisites or who do not attend the first class meeting are subject to automatic disenrollment.

Prerequisite Courses: Civil, Electrical, Manufacturing and Mechanical Engineering Technology Programs

The student must have satisfactorily completed the following subjects in his or her two-year associate degree program.

Prerequisites for admission that are common to all four Engineering Technology programs. Quarter hours indicated are minima.

Descriptive Title	Quarter Hours
English Composition, Technical Writing and/or Public Speaking	9
Algebra, Trigonometry and Analytic Geometry with Calculus	13
Differential and Integral Calculus	5
General Physics (with Laboratory)	8
Physics or Chemistry (with Laboratory)	4
Humanities or Social Sciences that partially satisfy UNC Charlotte General Education Goals III, V, and VI	6
Computer Programming (BASIC, FORTRAN, PASCAL, or C)	3
Technical Courses in Major Area as listed below	48*
Total	96

Electrical
Drafting
Electrical
D.C. Circuits
A.C. Circuits
Electronic Measurements
Digital Circuits (6 Q.H.'s min.)
Semiconductor Circuits
Communications Electronics or
Control Systems or
Micro Computers

Mechanical
Drafting
Machine Processes
Statics
Strength of Materials
Metallurgy or Engineering Materials
Kinematics or Mechanisms
Design Drafting or Machine Design
Basic Electrical Circuits
(or Physics III, Electricity)

Civil
Drafting
Surveying
Statics
Strength of Materials

Manufacturing
See following page.

Industrial (Emphasis of Mechanical)
Drafting
Statics and Strength of Materials
Production Planning
Work Measurement, or Time and Motion,
or Methods Analysis

*The 48 hours of major work must include courses covering all of the subjects in any one of the areas shown on this page or on the following page.

Prerequisite Courses: Manufacturing Engineering Technology Program

Electrical Background
Electrical Drafting
D.C. Circuits
A.C. Circuits
Digital Circuits (6 Q.H.'s min.)
Semiconductor Circuits
Communications Electronics or Control Systems or Microcomputers

Mechanical Background
Basic Electrical Circuits or Physics III - Electricity
Statics
Strength of Materials
Machine Processes
Metallurgy or Engineering Materials
Kinematics or Mechanisms
Design Drafting or Machine Design

Computer Technology Background
Micro Interfacing
Introduction to Computers/Micros
Electronics for Computers
Computer Aided Design
Industrial Computer Applications
Process Control

Laser, Electro-Optics Background*
Basic Optics
Digital/Analog Circuits
Electronic Measurements or Instrumentation
Control Systems or Communications or Computer Interfacing
Others from:
Laser Optics
Materials
Industrial Optics
Signal Processing or Technical Electives

Industrial Background
Drafting
Production Planning
Work Measurement or Methods Analysis or Time and Materials
Statistics
Machine Processes or Manufacturing
Strength of Materials
Statics

Manufacturing, Automation or Robotics Background
Microprocessors or Numerical Control
Drafting or Design
Machine/Manufacturing Processes
Metallurgy or Engineering Materials
Electrical Circuits or Electrical Measurements or Physics III - Electricity
Manufacturing, Automation or Robotics

Instrumentation/Controls Background
Digital/Analog Circuits
Electrical Drafting
DC/AC Circuits
Industrial Instrumentation
Controls

*For entry into Applied Optical/Precision Manufacturing Engineering Technology emphasis only.

CURRICULUM OUTLINE: B.E.T. DEGREE

CIVIL ENGINEERING TECHNOLOGY PROGRAM
General Civil Engineering Technology Emphasis

Junior Year

CIET 3111 Structural Analysis I.....3
CIET 3121 Foundations and Earthwork ...3
CIET 3151 Soil Testing Lab 1
ENGL 2116 Introduction to Technical Communication 3
Directed Elective (b) 3
General Education Elective (c) 3

CIET 3112 Structural Analysis II 3
CIET 3132 Hydraulics 3
EGET 3171 Engineering Analysis I 3
CIET 3150 Hydraulics and Materials Lab 1
Directed Elective (b) 3
General Education Elective (c) 3

Senior Year

CIET 3212 Structural Steel Design 3
CIET 3262 Introduction to Environmental Engineering 3
EGET 3273 Engineering Analysis III 3
Major Elective (d) 3
CHEM 1101 Principles of Chemistry or ESCI 1102 Earth Science Geology (both with lab) 4

CIET 3211 Reinforced Concrete Design ...3
CIET 3241 Highway Design and Construction 3
Major Elective (d) 3
Major Elective Lab (d) 1
General Education Electives (c).....6

CIVIL ENGINEERING TECHNOLOGY PROGRAM
Construction Engineering Technology Emphasis

Junior Year

CIET 3111 Structural Analysis I.....3
CIET 3121 Foundations and Earthwork ...3
CIET 3151 Soil Testing Laboratory 1
ENGL 2116 Introduction to Technical Communication 3
Directed Elective (b) 3
General Education Electives (c).....3

CIET 3112 Structural Analysis II 3
CIET 3132 Hydraulics 3
EGET 3171 Engineering Analysis I 3
CIET 3150 Hydraulics and Materials Lab 1
Directed Elective (b) 3
General Education Electives (c) 3

Senior Year

CIET 3212 Structural Steel Design 3
CIET 3281 Cost Estimating I 3
ESCI 1102 Earth Science Geology 4
CIET 3243 Project Management
Major Elective (c) 3

CIET 3211 Reinforced Concrete Design ...3
CIET 3293 Mechanical, Plumbing, and Electrical Systems for Buildings 3
Major Elective with lab (d) 3
General Education Elective 3

NOTE: Footnotes pertaining to the above outlines are given on page 281.

CURRICULUM OUTLINE: B.E.T. DEGREE

ELECTRICAL ENGINEERING TECHNOLOGY PROGRAM
With Emphasis on Computer Engineering Technology

Junior Year

ELET 3153 ELET Laboratory. I 1	ELET 3114 Anal. of Linear Ntwks. II 3
ELET 3183 Digital Logic Design 3	ELET 3112 Semiconductors.....3
EGET 3171 Engineering Analysis I 3	ELET 3156 ELET Laboratory II 1
ENGL 2116 Technical Communication 3	EGET 3172 Engineering Analysis II.....3
Directed Elective (b) 3	Directed Elective (b) 3
ELET 3113 Linear Analysis.....3	General Education Elective (c) 3

Senior Year

ELET 3281 Microprocessor Design 3	ELET 3212 Active Networks II.....3
ELET 3255 ELET Laboratory III 1	ELET 3256 ELET Laboratory IV.....1
ELET 3211 Active Networks I 3	ELET 3275 Integrated Circuit App.....3
ELET 3285 Assembly Language Prog. 3	ELET 3286 Microcomputer Applications ..3
General Education Electives (c).....6	Major Elective (d) 3
	General Education Elective (c) 3

ELECTRICAL ENGINEERING TECHNOLOGY PROGRAM
With Emphasis on Electronics

Junior Year

ELET 3153 ELET Laboratory I 1	ELET 3114 Anal. of Linear Ntwks. II 3
ELET 3183 Digital Logic Design 3	ELET 3112 Semiconductors.....3
EGET 3171 Engineering Analysis I 3	EGET 3172 Engineering Analysis II.....3
ELET 3113 Analysis of Linear Ntwks. I...3	ELET 3156 ELET Laboratory II 1
Directed Elective (b) 3	General Education Elective (c) 3
	Directed Elective (b) 3

Senior Year

ELET 3213 Industrial Electronics.....3	ELET 3212 Active Networks II.....3
ELET 3257 ELET Laboratory III 1	ELET 3258 ELET Laboratory IV.....1
ELET 3211 Active Networks I 3	ELET 3222 Automatic Controls 3
ELET 3285 Assembly Language Prog. 3	ELET 3214 Operational Amplifiers 3
General Education Electives (c).....6	Major Elective (d) 3
	General Education Elective (c) 3

NOTE: Footnotes pertaining to the above outlines are given on page 281.

CURRICULUM OUTLINE: B.E.T. DEGREE

MANUFACTURING ENGINEERING TECHNOLOGY (Interdisciplinary)
General Manufacturing Engineering Technology

Lower Division Program in which A.A.S. Earned	Semester Hours ELET	INET	MFG/ AUTO/ ROBOT	COMP	MEET	INSTR CONTR
COMMON CORE COURSES						
CHEM 1101 Chemistry	3	3	3	3	3	3
ENGR 3590 Engineering Cooperative Education Experience (3)	0	0	0	0	0	0
ENGR 3595 Engineering Cooperative Education Seminar (1 SH x 3)	3	3	3	3	3	3
General Education Electives (c)	12	12	12	12	12	12
ENGL 2116 Introduction to Technical Communications	3	3	3	3	3	3
Directed Electives (b)	6	6	6	6	6	6
INET 3223 Engineering Economics	3	3	3	3	3	3
EGET 3171 Engineering Analysis I	3	3	3	3	3	3
MFET 3131 Computer Integrated Mfg	3	3	3	3	3	3
MFET 3251 Computer Integrated Mfg. Lab	2	2	2	2	2	2
INET 3133 Quality Control	3	3	3	3	3	3
MFET 3181 Digital Process Control	3	3	3	3	3	3
MFET 3232 Senior Design Project I	2	2	2	2	2	2
MFET 3242 Senior Design Project II	2	2	2	2	2	2
Subtotal	48	48	48	48	48	48
SPECIALIZED TECHNICAL COURSES						
EGET 3172 Engineering Analysis II	3	-	-	-	-	-
MFET 3111 Manufacturing Processes	3	-	-	3	3	3
STAT 1220 Elements of Statistics I (BUSN)	3	-	3	3	3	3
ELET 3113 Analysis of Linear Networks I	3	-	-	-	-	-
ELET 3114 Analysis of Linear Networks II	3	-	-	-	-	-
ELET 3183 Digital Logic Design	3	-	-	-	-	3
ELET 3153 ELET Laboratory I	1	-	-	-	-	-
MEET 3163 Instrumentation and Controls	-	3	3	3	3	-
MEET 3251 Instrumentation Laboratory	-	1	1	1	1	-
BUSN 3100 Operations Management	-	3	3	-	3	-
Subtotal	19	7	10	10	13	9
APPROVED TECHNICAL ELECTIVES (from Departmental List)	0	12	9	9	6	10
TOTALS	67	67	67	67	67	67

CURRICULUM OUTLINE: B.E.T. DEGREE

MANUFACTURING ENGINEERING TECHNOLOGY (Interdisciplinary)
Manufacturing Engineering Technology with Optics Emphasis

Lower Division Program in which A.A.S. Earned	Semester Hours OPTICS	ELET	INET	MFG/ AUTO/ ROBOT	COMP	MEET	INSTR CONTR
COMMON CORE COURSES							
CHEM 1101 Chemistry	3	3	3	3	3	3	3
ENGR 3590 Engineering Cooperative Education Experience (3)	0	0	0	0	0	0	0
ENGR 3595 Engineering Cooperative Education Experience (1SH x 3)	3	3	3	3	3	3	3
General Education Electives (c)	12	12	12	12	12	12	12
ENGL 2116 Introduction to Technical Communications	3	3	3	3	3	3	3
Directed Electives (b)	6	6	6	6	6	6	6
INET 3223 Engineering Economics	3	3	3	3	3	3	3
EGET 3171 Engineering Analysis I	3	3	3	3	3	3	3
MFET 3131 Computer Integrated Mfg.	3	3	3	3	3	3	3
MFET 3251 Computer Integrated Mfg. Lab	2	2	2	2	2	2	2
INET 3133 Quality Control	3	3	3	3	3	3	3
MFET 3181 Digital Process Control	3	3	3	3	3	3	3
MFET 3232 Senior Design Project I	2	2	2	2	2	2	2
MFET 3242 Senior Design Project II	2	2	2	2	2	2	2
Subtotal	48	48	48	48	48	48	48
SPECIALIZED TECHNICAL COURSES							
MFET 3111 Manufacturing Processes	3	3	3	-	3	3	3
MATH 1220 Elements of Statistics I	3	3	-	3	3	3	3
MEET 3163 Instrumentation and Controls	3	-	3	3	3	3	-
MEET 3251 Instrumentation Laboratory	1	-	1	1	1	1	-
BUSN 3100 Operations Management	-	-	3	3	-	-	-
Subtotal	10	6	10	10	10	10	6
REQUIRED TECHNICAL ELECTIVES *selected from the following*	4	8	8	8	8	8	8
MFET 3141 Industrial Applied Optical Systems							
MFET 3151 Applied Optical Systems Lab							
MFET 3211 Topics in Precision Manufacturing							
MFET 3221 Data Recording Technology							
MFET 3252 Recording Technology Lab							
OTHER TECHNICAL ELECTIVES (from Departmental List)	5	5	1	1	1	1	5
Total	67	67	67	67	67	67	67

CURRICULUM OUTLINE: B.E.T. DEGREE
MECHANICAL ENGINEERING TECHNOLOGY PROGRAM
General Mechanical Engineering Technology Emphasis

Junior Year

MEET 3123 Strength of Materials 3
MEET 3152 Stress Analysis Lab.....1
MEET 3133 Fluid Mechanics 3
EGET 3171 Engineering Analysis I 3
ENGL 2116 Introduction to Technical Communications 3
Directed Elective (b) 3

MEET 3113 Dynamics 3
MEET 3163 Instrumentation and Controls.....3
MEET 3151 Fluids Mechanics Lab.....1
INET 3223 Engineering Economics 3
CHEM 1101 Principles of Chemistry (a)...3
Directed Elective (b) 3

Senior Year

MEET 3213 Machine Design 3
MEET 3143 Thermodynamics 3
MEET 3251 Instrumentation Lab.....1
EGET 3273 Engineering Analysis III.....3
Major Elective (d) 3
General Education Elective (c) 3

MEET 3243 Senior Design Project.....3
MEET 3252 Thermodynamics Lab.....1
Major Elective (d) 3
General Education Electives (c).....9

MECHANICAL ENGINEERING TECHNOLOGY PROGRAM
Industrial Engineering Technology Emphasis

Junior Year

MEET 3123 Strength of Materials 3
MEET 3133 Fluid Mechanics 3
INET 3103 Methods Analysis 3
EGET 3171 Engineering Analysis I 3
ENGL 2116 Introduction to Technical Communications 3
INET 3151 Methods Analysis Lab 1

CHEM 1101 Principles of Chemistry (a)...3
MATH 1220 Elements of Statistics 3
INET 3123 Production Control 3
MEET 3151 Fluid Mechanics Lab 1
INET 3223 Engineering Economics 3
MEET 3113 Dynamics 3

Senior Year

INET 3251 Plant Layout Lab 1
INET 3213 Quality Control.....3
INET 3203 Plant Layout 3
General Education Electives (c).....6
Directed Elective (b) 3

INET 3211 Directed Project 1
Major electives (d).....6
General Education Electives (c).....3
Directed Elective (b) 3

NOTES REGARDING CURRICULUM OUTLINES

FOOTNOTES

a. A student who has previously taken a college-level course in general chemistry shall substitute for this requirement another course in chemistry, physics, biology or earth science as shown in the table below.

Students who have previously taken:	Shall take at UNCC:
3 quarters of physics and no chemistry	Chemistry 1101
2 quarters of physics and 1 quarter of chemistry	Physics 1102 (Physics 1101 with permission)
3 quarters of physics and at least 1 quarter of chemistry (4 quarter hours)	Earth Science 1101 or 1102 Biology 1101 or Physics 1130

b. Directed electives shall be selected from a list maintained in the Departmental office. Students whose native language is English and who lack a foreign language proficiency through the FORL 1102 level should use these hours to help develop such proficiency. Students whose native language is not English and who lack an English language proficiency through the ENGL 1102 level should utilize these hours to develop such proficiency.

c. Graduates are required to satisfy the UNC Charlotte Goals of Education as stated in this catalog. The student's faculty adviser will inform the student of the goals that have been met by course work transferred from a two-year college or other college and that will be met by completion of required courses. The student is responsible for taking courses at UNC Charlotte to satisfy the remainder of the goals.

d. Major elective courses must be upper division courses offered by the College of Engineering or courses related to the student's field of specialization and approved by the Department as major electives.

ENGINEERING TECHNOLOGY (EGET) COURSE DESCRIPTIONS

An Engineering Technology course may be used for elective or minor credit by a student in another major only with the prior approval of the student's major department and the Department of Engineering Technology.

EGET 3000. Special Topics in Engineering Technology. (1-4) Prerequisite: senior standing in Engineering Technology or consent of the Department. Examination of specific new areas which are emerging in the various fields of engineering technology. The course builds upon the knowledge the students have gained from their engineering technology curriculum. May be repeated for credit. *(On demand)*

EGET 3171. Engineering Analysis I. (P) (3) Prerequisites: differential and integral calculus. Methods of solving engineering problems which involve the differentiation and integration of algebraic, trigonometric and logarithmic functions; use of integral tables. *(Fall, Spring, Summer) (Evenings)*

EGET 3172. Engineering Analysis II. (P) (3) Prerequisite: EGET 3171. A study of constant coefficient linear differential equations, including nonhomogeneous equations; Laplace transforms and the use of Laplace transform tables; applications to the analysis of dynamic systems. *(Spring, Summer) (Evenings)*

EGET 3233. Computer Graphic Technology. (3) Study of computer graphics as a design drafting tool. Using computer driven plotters and digitizers to prepare engineering drawings and illustrations. *(On demand)*

EGET 3273. Engineering Analysis III. (3) Prerequisite: EGET 3171. Elementary numerical methods for the solution of engineering problems on the digital computer. Emphasis on applications to civil and mechanical engineering technology, using both commercial and student written programs. *(Fall)*

EGET 3695. Engineering Technology Cooperative Education Seminar. (1) Required of Co-op students during semesters immediately following each work assignment for presentation of engineering reports on work done the prior semester. *(Fall, Spring, Summer)*

CIVIL ENGINEERING TECHNOLOGY (CIET)

CIET 3111. Structural Analysis I. (3) Prerequisite: elementary courses in statics and strength of materials. Basic concepts and principles of structural analysis relating to beams, trusses and frame structures. Analysis of statically determinate structures under fixed and moving loads, influence lines for moving loads. Approximate analysis of indeterminate structures. Emphasis on practical aspects of structural analysis. *(Fall, Spring)*

CIET 3112. Structural Analysis II. (3) Prerequisite: CIET 3111. Deflection of structures. Analysis of statically indeterminate structures using the methods of three-moments, consistent distortions, slope deflection and moment-distribution. An introduction to matrix methods of structural analysis. *(Spring, Summer)*

CIET 3121. Foundations and Earthwork. (3) Study of basic design and construction of foundations. Background theories are generally introduced in concise forms as formulas or charts. Emphasis on practical aspects of foundation design and earthwork construction. *(Fall)*

CIET 3132. Hydraulics. (3) A study of the fundamental principles of hydraulics and their applications in engineering practice, including the fundamentals of fluid flow through orifices, tubes and pipes, in open channels, and over weirs. *(Spring)*

CIET 3150. Hydraulics and Materials Laboratory. (1) Laboratory designed to provide the student with: (1) An understanding of apparatus, techniques and procedures used to measure hydraulic flow, pressure, and head loss in open and closed conduits. Verification of some of the principles of hydraulics relating to fluid flow through Venturi meters, orifices, tubes and closed conduits, in open channels and over weirs; (2) An understanding of the apparatus, techniques, procedures, and test standards used to test construction materials. Three laboratory hours per week. *(Fall, Spring)*

CIET 3151. Soil Testing Laboratory. (W) (1) Prerequisite or corequisite: CIET 3121. A laboratory that is designed to familiarize the student with the common laboratory soil tests and analysis procedures with emphasis on the significance of the various tests, the testing procedures and the detailed computations. Three laboratory hours per week. *(Fall)*

CIET 3154. Asphalt and Asphalt Mixtures Laboratory. (W) (1) Study of physical properties of asphalt, of aggregates and their combinations, principles and practice in the design, construction and control of asphalt mixtures; laboratory tests for asphalts, aggregates and mixture design including specimen preparation and stability evaluation. Three laboratory hours per week. *(Spring)*

CIET 3211. Reinforced Concrete Design. (3) Prerequisite or corequisite: CIET 3112. Design of rectangular beams, T-beams, columns, reinforced concrete floor systems and reinforced concrete footings, according to the ACI code. Quality control of concrete and structural inspection. *(Spring) (Evenings)*

CIET 3212. Structural Steel Design. (3) Prerequisite: CIET 3112. Design of beams and columns, floor framing, tension and compression members, bolted and welded connections, according to AISC specifications. *(Fall) (Evenings)*

CIET 3213. Wood Structural Technology. (3) Prerequisite: CIET 3111. Design of floors, beams, columns and trusses of both solid and glued laminated wood; includes wood joints and concrete forms. *(On demand)*

CIET 3241. Highway Design and Construction. (3) Introduction to highway planning, economic considerations and traffic engineering. Design and construction of modern highways including grade separations and interchanges. *(Spring) (Evenings)*

CIET 3242. Pavement Design. (3) Prerequisite: CIET 3241. Study of stresses in flexible and rigid pavements, and properties of pavement components. Design of rigid and flexible pavements. Discussion of pavement performance and failures and of pavement strengthening. *(On demand)*

CIET 3243. Project Management Technology. (3) Use of CPM and other network analysis methods for planning, managing and controlling projects. *(Fall)*

CIET 3252. Environmental Laboratory. (W) (1) Prerequisite or corequisite: CIET 3262. Laboratory on the analysis of water and sewage and problems related to environmental control. Three laboratory hours per week. *(Fall)*

CIET 3253. Construction Engineering Technology Field Laboratory. (W) (1) Prerequisite: senior standing. A synthesis of prior work, using fundamental principles as applied in a directed project. Three laboratory hours per week. *(Spring)*

CIET 3262. Introduction to Environmental Engineering Technology. (3) Prerequisite: CIET 3132. Study of water supply, treatment and distribution and liquid-waste disposal systems. *(Fall)*

CIET 3281. Cost Estimating I. (3) Methods used to estimate costs of construction activities. Develops the methods and procedures for preparing quantity surveys and to estimate labor and equipment requirements. *(Fall)*

CIET 3282. Cost Estimating II. (3) Prerequisite: CIET 3281. Estimating techniques applied to project work. Topics include subcontractors, plant and overhead costs, profit and bidding. *(Spring)*

CIET 3293. Building Systems. (3) Basic theory and practical application of heating, ventilation, air conditioning, plumbing and electrical systems in construction. Study of National Fire and Plumbing Codes. *(Spring) (Evenings)*

ELECTRICAL ENGINEERING TECHNOLOGY (ELET)

ELET 3112. Semiconductors. (3) Prerequisites or corequisites: ELET 3113. Atomic structure; properties of semiconductor materials; diodes, bipolar transistors; integrated circuit fabrication; field-effect transistors. *(Spring)*

ELET 3113. Analysis of Linear Networks I. (3) Prerequisite or corequisite: EGET 3171 or MATH 1120A. Resistive circuits; current and voltage sources; Kirchoff's laws, network theorems, RC and RL circuits; sinusoidal excitation and phasors; dependent sources. *(Fall, Spring) (Evenings)*

ELET 3114. Analysis of Linear Networks II. (3) Prerequisites: ELET 3113. Prerequisite or corequisite: EGET 3172. AC steady state analysis; average power; effective voltage and current; complex impedance concepts; applications of network theorems, frequency response; RLC networks and second order circuits; transformers; application of computers to network problems. *(Spring, Summer) (Evenings)*

ELET 3153. ELET Laboratory I. (W) (1) Prerequisites or corequisites: ELET 3113 and 3183. Experiments which support concepts and practice covered in ELET 3113 and 3183. Three laboratory hours per week. *(Fall) (Evenings)*

ELET 3156. ELET Laboratory II. (W) (1) Prerequisites or corequisites: ELET 3112 and 3114. Experiments which support concepts and practice covered in ELET 3112 and 3114. Three laboratory hours per week. *(Spring) (Evenings)*

ELET 3183. Digital Logic Design. (3) Prerequisite: two-quarter course sequence in digital logic circuits. Design of combinational and sequential digital logic circuits. Minimization methods and state assignment techniques. Circuit implementation using MSI, LSI, and programmable circuits. Introduction to computer architecture. *(Fall) (Evenings)*

ELET 3211. Active Networks I. (3) Prerequisites: EGET 3172, ELET 3112 and 3114. Rectifiers; amplifiers analysis; transistor biasing; small signal models; feedback amplifier analysis; amplifier frequency response. *(Fall)*

ELET 3212. Active Networks II. (3) Prerequisite: ELET 3211. Amplifier frequency response (continued); feedback amplifier frequency response; operational amplifiers and applications. *(Spring)*

ELET 3213. Industrial Electronics. (3) Prerequisite: ELET 3172. Prerequisite or corequisite: ELET 3211. Powerdiodes, bipolar power transistors, thyristors, power MOSFET's and their circuit applications to industrial problems. *(Fall) (Evenings)*

ELET 3214. Operational Amplifiers with Applications. (3) Prerequisite: ELET 3211. Ideal OP-AMP analysis, practical OP-AMP considerations, linear OP-AMP circuits, nonlinear OP-AMP circuits, practical applications. *(Spring) (Evenings)*

ELET 3222. Automatic Controls. (3) Prerequisite or corequisite: ELET 3212. Automatic control concepts; mathematical models; control system components; transient and frequency response; control system design. *(Spring)*

ELET 3255. ELET Laboratory III. (W) (1) Prerequisite or corequisite: ELET 3211 and 3281. Experiments which support concepts and practice covered in ELET 3211 and 3281. Three laboratory hours per week. *(Fall) (Evenings)*

ELET 3256. ELET Laboratory IV. (W) (1) Prerequisites or corequisites: ELET 3212 and 3275. Experiments which support concepts and practice covered in ELET 3212 and 3275. Three laboratory hours per week. *(Spring) (Evenings)*

ELET 3257. ELET Laboratory III. (W) (1) Prerequisites or corequisites: ELET 3211 and 3213. Experiments which support concepts and practice covered in ELET 3211 and 3213. Three laboratory hours per week. *(Fall) (Evenings)*

ELET 3258. ELET Laboratory IV. (W) (1) Prerequisites or corequisites: ELET 3212, 3214, and 3222. Experiments which support concepts and practice covered in ELET 3212, 3214, 3222. Three laboratory hours per week. *(Spring) (Evenings)*

ELET 3261. Industrial Instrumentation. (3) Prerequisites: ELET 3112 and 3114. Pneumatic and electrical sensors and transducers used for measuring physical processes, such as temperature, pressure and flow rate; selection criteria; standards and calibration. *(Spring)*

ELET 3275. Integrated Circuit Applications. (3) Prerequisites: ELET 3112 and 3183. Study of the external characteristics of digital and analog integrated circuits. Applications of these circuits in digital systems. Design constraints and considerations due to device limitations. Device selection based upon application requirements. *(Fall)*

ELET 3281. Computer Design. (3) Prerequisite: ELET 3183. Prerequisite or corequisite: ELET 3285. Organization and design approaches for computer systems. Hardware-software relationships. Microprogramming. Arithmatic algorithms. Input-output design; multiprocessor systems and networks. *(Fall) (Evenings)*

ELET 3284. Design of Real-Time Systems. (3) Prerequisite: ELET 3285. Prerequisite or corequisite: ELET 3281. Characteristics and applications of real-time computer systems, especially as applied to process control, monitoring, and data collection; the computer as a part of the total system, programming for real-time applications; reliability and maintainability; effects of downtime. *(On demand)*

ELET 3285. Assembly-Language Programming. (3) Prerequisites: ELET 3183 and CSCI 1100. Z-80 and 68000 machine and assembly language programming. *(Fall)*

ELET 3286. Microcomputer Applications. (3) Prerequisite: ELET 3281. Architecture, instruction set, and bus structure of representative microprocessors; assembly language programming; interfacing experiments. Two lecture hours and three laboratory hours per week. *(Spring) (Evenings)*

INDUSTRIAL ENGINEERING TECHNOLOGY (INET)

INET 3103. Methods Analysis. (3) Analysis of work methods; a study of work measurement systems; regression techniques in formula construction; progress curves. *(Fall) (Evenings)*

INET 3123. Production Control Systems. (3) Prerequisite: statistics. Principles, analysis and design of production and inventory planning and control systems. Demand forecasting, production scheduling and control systems and introduction to CPM. *(Fall) (Evenings)*

INET 3133. Quality Control. (3) Prerequisite: statistics. The theory and application of inspection sampling plans and control charts for the design, specification and control of product quality. Statistical process control methods applied to the design of products and the control of the manufacturing process. *(Spring)*

INET 3151. Method Analysis Laboratory. (W) (1) Prerequisite or corequisite: INET 3103. Analysis and design of work methods; principles of motion study; work measurement by direct and predetermined motion-time systems; video tape and motion picture analysis. *(Spring)*

INET 3203. Plant Layout. (3) Prerequisite: INET 3103. Designing a plant or office with respect to material handling, machine location, auxiliary services, capital requirements, safety and personnel organization. *(Fall) (Evenings)*

INET 3223. Engineering Economics. (3) Principles of evaluating alternative engineering proposals. Economic measures of effectiveness, costs and cost estimation, basic comparative models, breakeven and replacement analysis. *(Spring, Summer)*

INET 3233. Occupational Safety. (3) Causes and prevention of industrial accidents. Hazardous processes and material. Design of accident prevention programs. *(Spring) (Evenings)*

INET 3243. Occupational Health Technology. (3) Methodology and philosophy of evaluating and monitoring the work environment for human stresses and toxic substances which affect the health of the worker. Topics include gases, vapors, fumes and dust; radioactivity hazards; occupational diseases; thermal stress; illumination and exhaust ventilation. *(On demand)*

INET 3251. Plant Layout and Materials Handling Laboratory. (W) (1) Prerequisite or corequisite: INET 3203. Analysis and design of material handling systems; specifications of system components. *(Spring) (Evenings)*

INET 3263. Human Factors. (3) Human capabilities and limitations affecting communications and response in man-machine systems. Physiological and psychological fundamentals; anthropometrics. *(On demand)*

INET 3811. Directed Projects. (1) Prerequisite: senior standing. A synthesis of prior work using fundamental principles applied in a directed project. Design of production systems and subsystems. *(On demand)*

MANUFACTURING ENGINEERING TECHNOLOGY (MFET)

MFET 3111. Manufacturing Processes. (3) Capabilities, limitations, and operating characteristics of families of machine tools and processes; casting, cutting, forming, joining, fabricating, and inspection machinery. *(Fall)*

MFET 3131. Computer Integrated Manufacturing (CIM). (3) Automated manufacturing systems involving computers to monitor vendor input, process variations, component selection and routing, and test and evaluation of products. Applications involving integration of computer aided design (CAD) systems with computer aided manufacturing (CAM) systems. *(Spring)*

MFET 3141. Industrial Applied Optical Systems. (3) Prerequisite: EGET 3171. The applications of electro-optical technology in manufacturing and industrial systems is investigated. The fundamentals of applied optics, laser theory and semi conductor optical devices will be reviewed. *(Fall)*

MFET 3141L. Applied Optical Systems Laboratory. (1) Corequisites: MFET 3141. Applications of electro-optical technology in manufacturing systems. Laboratory experiements demonstrating the use of lasers in the following manufacturing and industrial applications will be performed: cutting, machining, welding, measurement, marking, and control of processes; Machine vision systems, sorting, process control, and real time quality control; Bar code systems; Optical character reconition; Optical data transmission. *(Fall)*

MFET 3181. Digital Process Control. (3) Prerequisite: MEET 3164. Applications and programming of microprocessors and programmable controllers for control of manufacturing processes. Interfaces with sensors, actuators, and computer systems. Includes classroom and laboratory demonstrations. *(Spring)*

MFET 3211. Topics in Precision Manufacturing. (3) A seminar in selected areas of modern production of both conventional and micro-miniaturized products; surface mount technology for electronic components; manufacturing in the clean room environment; metrology; manufacture of micro-miniature mechanical systems; vacuum coating and plating systems; systems for automatic process control and product inspection. *(Spring)*

MFET 3221. Data Recording Technology. (3) Prerequisite: MFET 3141. Principles of operation of high speed, high capacity data recording systems used in industrial and commercial applications; magnetic disk and tape systems; CD-ROM systems; WORM (write once, real many) optical disk systems; TMO (thermo-magneto-optical) disk systems; and videodisks. Comparative analysis of systems and of manufacturing techniques used in their production. *(On Demand)*

MFET 3232 and MFET 3242. Senior Design Project I and II. (2) (2) Prerequisites: Senior standing or permission. A two semester course sequence in which each student conceives, proposes and implements a senior level design project which demonstrates abilities as developed by the coursework taken thus far. Each student uses industrial project planning techniques to complete a project proposal and plans and completes the project including design evaluation during the second semester. One class hour and three lab hours per week. Students must have an approved project before they are permitted to enroll in this course. *(Fall, Spring)*

MFET 3251. CIM Laboratory. (W) (2) Experiments with computer control of processes, including numerical control and robotics. Measurement of physical variables for monitoring, controlling, and testing production operations. Application of microprocessors and micro computers to system control and status reporting. One class hour, three laboratory hours per week. *(Spring)*

MFET 3252. Data Recording Technology Laboratory. (1) Prerequisite or corequisite: MFET 3221. Experiments using various magnetic and optical date recording systems to illustrate characteristics and principles of operation. Examination and test of media and drive systems, with attention to precision manufacturing and quality control considerations. Formal laboratory reports in simulated testing laboratory format. *(On Demand)*

MECHANICAL ENGINEERING TECHNOLOGY (MEET)

MEET 3113. Dynamics. (3) Prerequisites: statics, differential and integral calculus. The dynamic behavior of particles; translation, rotation and plane motion of a rigid body , the principles of conservation of energy and momentum. *(Spring)*

MEET 3123. Strength of Materials. (3) Prerequisites: statics, differential and integral calculus. Stress-strain relationships resulting from direct loads, torsional loads and bending loads, and the results obtained from applying more than one of these loads simultaneously. Beam deflection and column loading. *(Fall) (Evenings)*

MEET 3133. Fluid Mechanics. (3) Fundamental principles of fluid mechanics. Topics include manometry, buoyancy, forces on submerged bodies, boundary layers, flow over surfaces, Bernoulli's equation with applications, orifices, pipe losses and an introduction to hydrodynamics. *(Fall) (Evenings)*

MEET 3143. Thermodynamics. (3) Prerequisites or corequisites: differential and integral calculus. Fundamentals of thermodynamics including work and heat; classical approach to first and second laws of thermodynamics; ideal gas, entropy, reversibility, irreversibility, and study of various processes and cycles. *(Spring) (Evenings)*

MEET 3151. Fluid Mechanics Laboratory. (W) (1) Prerequisite or corequisite: MEET 3133. Flow through conduits and in open channels, the experimental determination of fluid specific weights, viscosity and flash and fire points. Flow measuring devices such as orifices, venturi tubes, anemometers and pitot tubes. Laminar-turbulent flow and stability. *(Spring) (Evenings)*

MEET 3152. Stress Analysis Laboratory. (W) (1) Prerequisite or corequisite: MEET 3123. Experiments illustrating stress-strain relationships in engineering materials and the use of brittle coating, photoelasticity and electrical-resistance strain gages. *(Fall) (Evenings)*

MEET 3163. Instrumentation and Controls. (3) Introduction to instrumentation for measurement and control of physical variables, with emphasis on electronic systems. Review of basic circuit analysis, electrical instruments, sensors and measurement principles and a survey of automatic controls from a systems point of view. *(Spring)*

MEET 3213. Machine Design I. (3) Prerequisite: MEET 3123. Prerequisite or corequisite: MEET 3114. Analysis and design of clutches, brakes, belts and roller chain. Indeterminate normal loading, superposition of stresses and deflections, compound stresses, columns and fatigue. Theories of failure. Shaft design, deflections of shafts with nonuniform moments of inertia involving computer verification. Antifriction bearings, engineering materials, helical compression springs. Small mechanical component and system designs. *(Spring) (Evenings)*

MEET 3223. Machine Design II. (3) Prerequisite: MEET 3213. A continuation of MEET 3213 with emphasis on new methods of problem solving and opportunities to integrate previously attained skills and knowledge into the design and optimization of small machine systems. *(On Demand)*

MEET 3243. Senior Design Project. (3) Prerequisite: MEET 3133, 3143, 3213, and 3163. This course is designed to give students experience in applying standard design methods to a variety of problems. Students develop in applying standard design methods to a variety of problems. Students develop solution to design problems requiring application of skills developed in mathematics and technical specialty courses. Design problem solutions are presented in both written form and to the class in oral presentations. May be repeated for credit. *(Spring)*

MEET 3251. Instrumentation Laboratory. (W) (1) Prerequisite or corequisite: MEET 3164. Practice in the use of the various instrumentation devices studied in MEET 3164. *(Fall) (Evenings)*

MEET 3252. Thermodynamics and Heat Transfer Laboratory. (W) (1) Prerequisite or corequisite: MEET 3143. Experimentation involving the fundamental principles of thermodynamics and heat transfer, as applied to internal combustion engines, steam engines, engine dynamometers, refrigeration and heat pumps, solar energy systems, and heat exchangers. Three laboratory hours per week. *(Fall) (Evenings)*

MEET 3263. Fluid Power. (3) Prerequisite: MEET 3133. Mechanical and fluid power and the conversion of one to the other. Components and system efficiencies including those consisting of cascaded components. Performance evaluation of such hydraulic components as pumps, motors, valves and metering devices. Viscosity, bulk modulus, noise, optimum performance and system design will be considered. *(On demand)*

MEET 3273. Air Conditioning Systems. (3) Prerequisite: MEET 3143. Functions and operating characteristics of the major components of refrigerating machines, heat pumps, boilers, furnaces, heat exchangers, solar collectors, fans and pumps. Emphasis on sizing, economics and performance characteristics. Includes coverage of psychometric principles and fan and pump laws. *(On demand)*

MEET 3283. Modern Techniques in Energy Conservation and Utilization. (3) Prerequisite: MEET 3143 or consent of the instructor. Survey of current topics that may include solar energy, basic nuclear reactor technology, ammonia-based Rankine cycle, absorption refrigeration cycle, heat pump cycle, techniques for energy conservation in new construction and techniques for retrofitting existing energy utilization systems. *(On demand)*

Department of Mechanical Engineering and Engineering Science

Chairperson: Professor DeHoff; *Norvin Kennedy Dickerson, Jr. Distinguished Professor:* Hocken; *Distinguished Professor:* Nicollian; *Professors:* Houghton, Kim, Mohanty, Snyder; *Associate Professors:* Hari, Raja; *Adjunct Professor:* Wheeler; *Adjunct Associate Professor:* Mitry; *Assistant Professors:* Bodur, Estrada, Hjellming, Munday, Peindl; *Lecturers:* Dubler, Hiu; *Faculty Associate:* Wolny

Mechanical engineering is possibly the broadest of the engineering disciplines. Mechanical engineers are involved in almost all aspects of the technological problems facing today's society. Among the major concerns of the mechanical engineer are problems related to conversion, utilization and conservation of our limited energy resources. Additional important areas for the mechanical engineer include the design and analysis of machines, structures and manufacturing processes related to the industrial output of the nation. Increasingly this design and analysis is computer based. Mechanical engineers develop and utilize the techniques of computer-aided design (CAD/CAM) and incorporate the use of robots in manufacturing processes.

A sound understanding of the engineering sciences is fundamental to the education of engineers in every discipline. The engineering sciences are generally identified as those areas of engineering which emphasize the application of the fundamental principles of the physical sciences, primarily physics and chemistry, to engineering problems. Some classical and emerging engineering areas recognized to fall within this field include thermodynamics, fluid mechanics, engineering mechanics, engineering materials, nuclear and chemical sciences, microelectronics theory and fabrication and the solid state sciences.

The Department of Mechanical Engineering and Engineering Science offers an undergraduate program leading to a Bachelor of Science in Mechanical Engineering (B.S.M.E.) degree and graduate programs leading to a Master of Science in Mechanical Engineering (M.S.M.E.) and a Master of Science in Engineering (M.S.E.) degree. Using the flexibility provided by the technical electives, and with engineering career counseling, a student can develop a variety of educational programs which would provide the background for professional engineering licensing and practice in any of the areas included within mechanical engineering and/or the engineering sciences. The student can also prepare for graduate study in mechanical engineering, materials science or any of the recognized areas covered by the engineering sciences. Individualized study programs in one of the interdisciplinary fields involving the merger of engineering and the various science areas, such as bioengineering, microelectronics or chemical engineering sciences, can be developed.

The program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING (B.S.M.E.)

A major in Mechanical Engineering leading to the B.S.M.E. degree consists of a total of 132 credit hours. These requirements are:

English	9
Humanities and Social Science Electives	12
Economics	3
Mathematics	17
Physics	11
Chemistry	4
Science Elective	3
Freshman Engineering	1
Engineering Science	9
Electrical Engineering	6
Departmental Requirements	45
Technical Electives	12
	132

The social science and humanities electives must be chosen to satisfy Goals III, V and VI-X of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and must complement the student's overall educational plan to satisfy the college degree requirement.

The mathematics elective may be selected from STAT 2122, MATH 2164, or a 3000-level mathematics course approved by the Department.

The technical electives are chosen in consultation with the academic adviser. The student can use these electives to (1) obtain some breadth within the engineering sciences by choosing additional advanced courses from the various engineering sciences; (2) obtain significant depth within a particular area of mechanical engineering, or engineering science, through the use of available engineering science, mechanical engineering, science, mathematics and other engineering courses; (3) prepare for graduate work in mechanical engineering, engineering science or some other engineering areas. The technical electives must contain at least three hours of coursework dealing with engineering science, analysis, synthesis or design with the remaining nine hours being in engineering, science, mathematics, business or architecture.

All mechanical engineering majors must satisfactorily complete the Freshman Engineering course ENGR 1100 during their first semester in attendance in mechanical engineering at UNC Charlotte. Mechanical engineering majors may not accumulate more than three repeats in departmental courses in the upper division.

CURRICULUM OUTLINE: B.S.M.E. DEGREE

Freshman Year

ENGR 1100 Intro. to Engr 1	MEGR 1102 Engr. Graphics 2
CHEM 1101 Prin. of Chem. I 3	PHYS 2221 Dynamics 3
CHEM 1101L Chem. Lab 1	PHYS 2221L Experimental Phys. I 1
MATH 1141 Calculus I 4	MATH 1142 Calculus II 4
ENGL 1101 English 3	ENGL 1102 English 3
Humanities/Social Science 3	Science Elective 3

Sophomore Year

MEGR 2101 Computer Appl 2	EEGR 2162 Elec. Engr. II 3
ESGR 2141 Engr. Mech I 3	ESGR 2142 Engr. Mech. II 3
EEGR 2161 Basic Elec. Engr. I 3	MATH 2171 Differential Equ. 3
MATH 2141 Calculus III 3	MEGR 2154 Lab I 2
PHYS 2231 Electricity and Magnetism 3	ECON 2101 or 2102 3
PHYS 2231L Exper. Phys. II 1	PHYS 2241 Intro. to Modern Phys. 3
ENGL 2116 Tech. Comm. 3	

Junior Year

MEGR 3111 Thermodynamics I 3	MEGR 3112 Thermodynamics II 3
MEGR 3125 Analysis & Synthesis 3	MEGR 3126 Analysis & Design 3
MEGR 3153 Laboratory II 2	MEGR 3154 Laboratory III 2
ESGR 3141 Solid Mechanics 3	MEGR 3114 Fluid Mechanics 3
MEGR 3161 Engr. Materials 3	Technical Elective 3
Math Elective 3	Humanities/Social Science 3

Senior Year

MEGR 3299A Prof. Development 0	MEGR 3214 or MEGR 3222* 3
MEGR 3221 Mach. Analy. & Dsgn. 3	MEGR 3299 Prof. Development 1
MEGR 3253 Senior Design I 2	MEGR 3254 Senior Design II 3
MEGR 4111 Heat Transfer 3	Technical Elective 3
Technical Elective 3	Technical Elective 3
MEGR 3101 Engr. Economics 2	Humanities/Social Science 3
Humanities/Social Science 3	

*Senior-level design course selected to complement the student's overall educational and professional objective.

ENGINEERING SCIENCE (ESGR) COURSE DESCRIPTIONS

ESGR 2141. Engineering Mechanics I. (3) Prerequisite: PHYS 2221. Corequisite: MATH 1142. The first course of a two-semester sequence introducing the principles of particle and rigid body mechanics with engineering applications. Force systems and resultants. The equilibrium of particles and rigid bodies. Friction. Properties of areas and volumes. The inertia tensor. *(Fall, Spring) (Evenings)*

ESGR 2142. Engineering Mechanics II. (3) Prerequisite: ESGR 2141. Corequisite: MATH 1142. The kinematics and kinetics of particles. Work-energy and impulse-momentum principles and conservation laws. Introduction to the dynamics of systems of particles and of rigid bodies. Energy and momentum methods. *(Fall, Spring, Summer) (Evenings)*

ESGR 2143. Statics and Strength of Materials. (3) Prerequisite: PHYS 2221. Corequisite: MATH 1142. Force systems, resultants and equilibrium of particles and rigid bodies. Introduction to the engineering theory of deformable solids with applications. *(Spring, Summer) (Evenings)*

ESGR 3090. Special Topics in Engineering Science, Mechanics and Materials. (1-4) Prerequisite: consent of the Department. The course builds upon and synthesizes knowledge gained from the engineering science, mathematics and physical science stem of the core curriculum. Specific topics teach engineering analysis, synthesis and design and provide an opportunity for students to investigate an area of specialization. May be repeated for credit. *(On demand)*

ESGR 3131. Introduction to Electronic Materials. (3) Prerequisite: PHYS 2231, with a grade of *C* or better. Electronic materials and devices with examples from crystalline and amorphous semiconductors, junction and MOS devices, thermoelectrics, lasers and superconductors. Introduction to the quantum mechanics of electrons in solids, electron-atom interactions and energy band model, providing a basis for rationalizing a wide variety of electronic properties. *(Fall)*

ESGR 3141. Introduction to Solid Mechanics. (3) Prerequisites: ESGR 2141 and MATH 2141. Engineering theory of deformable solids and applications. Stress and deformation resulting from axial, torsion, and bending loads. Shear and moment diagrams, Mohr's circle for stress and strain, and buckling of columns. *(Fall, Spring, Summer) (Evenings)*

ESGR 3890. Individualized Study. (1-3) Prerequisite: consent of the Department. Supervised individual study with an area of particular interest to a student which is beyond the scope of the courses. May be repeated for credit. *(On demand)*

ESGR 3990. Undergraduate Research. (1-4) Prerequisite: consent of the Department. Independent study of a theoretical and/or experimental problem in a specialized area of engineering science, mechanics and materials. Students pursue an area or problem in more depth than possible in other courses. Topics for investigation may originate from the student or the faculty member supervising the study. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

ESGR 4131. Solid State Transformations. (3) (3G) Prerequisite: MEGR 3161, with a grade of *C* or better. Thermodynamics, morphology and kinetics of solid state transformations. Diffusion and absolute reaction rate theory; crystallographic nature of phase transformations; nucleation and growth processes; precipitation and oxidation reactions. *(Alternate years)*

ESGR 4134. Solid State Electronics. (3) (3G) Prerequisite: EEGR 3121 or ESGR 3131 or PHYS 2241, each with a grade of *C* or better, or consent of instructor. Electron theories of solids. Quantum mechanical foundations. Free electron and band models. Electron transport processes in metallic and nonmetallic conduction; diffusion and drift phenomena. Theory of semiconductors. *(Spring)*

ESGR 4162. Materials Production and Process. (3) (3G) Prerequisites: MEGR 3161, with a grade of *C* or better, and consent of instructor. Applications of thermodynamics and chemistry to extractive process metallurgy. Fundamental principles of materials forming operations. Casting, mechanical working and joining methods. *(Alternate years)*

ESGR 4165. Introduction to Nondestructive Evaluation Methods. (3) (3G) Prerequisite: MEGR 3161, with a grade of *C* or better. Nondestructive evaluation principles and techniques, including liquid penetrants, magnetic particle, acoustic emission, ultrasound, radiography and eddy currents. *(Alternate years)*

MECHANICAL ENGINEERING (MEGR)

MEGR 1102. Mechanical Engineering Graphics. (2) An introduction to engineering drawing. Topics include lettering, sketching, projection systems and auxiliary views. The use of CAD software is discussed. *(Spring) (Evenings)*

MEGR 2101. Introduction to Computer Applications. (2) Prerequisite: MATH 1141. Computer programming with emphasis on FORTRAN 77. Use of mainframe, mini and micro computing systems for the solution of engineering problems. *(Fall)*

MEGR 2154. Laboratory I. (2) Prerequisites: ENGL 2116 and PHYS 2231L. Use of laboratory equipment and application of the principles of experimentation and measurement. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

MEGR 3090. Special Topics in Mechanical Engineering. (1-4) Prerequisite: consent of the Department. The course will build upon and synthesize the knowledge the students have gained from the mechanical engineering core curriculum. The specific topics covered in each separate offering of the course will serve as the vehicle for teaching engineering analysis, synthesis and design, while simultaneously affording an opportunity for the students to point themselves toward an area of specialization. May be repeated for credit. *(On demand)*

MEGR 3101. Engineering Economics. (2) Prerequisite: senior standing. Basic concepts of engineering economics including equivalent annual costs, present worth, internal rates of return, benefit/cost ratios. Economic analysis of engineering systems. Optimization techniques for resource allocation. *(Fall)*

MEGR 3111. Thermodynamics I. (3) Prerequisite: ESGR 2142 or PHYS 2221 and MATH 2171. First and second laws of thermodynamics. Work and heat carnot cycle. Ideal and real gases. Nonreactive mixture of gases. Availability and irreversibility. *(Fall, Spring, Summer) (Evenings)*

MEGR 3112. Thermodynamics II. (3) Prerequisite: MEGR 3111, with a grade of *C* or better. General thermodynamic relations; equations of state and generalized charts. Combustion, dissociation and chemical equilibrium. Introduction to power cycles. *(Spring)*

MEGR 3114. Introduction to Fluid Mechanics. (3) Prerequisites: ESGR 2142. Basic concepts of a fluid and the fundamentals of ideal and real fluid flow. Topics include fluid statics, conservation principles, Bernoulli's equation, fluid flow in pipes, and measurement devices. *(Fall, Spring, Summer) (Evenings)*

MEGR 3125. Analysis and Synthesis of Mechanisms. (3) Prerequisite: ESGR 2142, with a grade of *C* or better. Kinematic elements, mechanisms and machines. Analysis of the motion of linkages, cams and gears. Kinematic design of cams, gears and gear-trains. Synthesis of plane linkages. Computer-aided design of kinematic systems. *(Fall, Spring)*

MEGR 3126. Analysis and Design of Mechanical Systems. (3) Prerequisites: MEGR 3125 and MATH 2171, both with a grade of *C* or better. Modeling of mechanical dynamic systems. Analysis and design of mechanical systems using time domain and frequency domain methods. Use of computer simulations in the design of mechanical systems. *(Spring, Summer)*

MEGR 3153. Laboratory II. (W) (2) Prerequisite: MEGR 2154, with a grade of *C* or better. Corequisites: MEGR 3111, ESGR 3141 and MEGR 3161. Laboratory experiments and development of basic experimental techniques and instrumentation necessary for measurements in the areas of engineering science, mechanics and materials. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

MEGR 3154. Laboratory III. (W) (2) Prerequisite: MEGR 3153, with a grade of *C* or better. Corequisite: MEGR 3114. Continuation of MEGR 3153. One hour of lecture and three laboratory hours per week. *(Spring, Summer) (Evenings)*

MEGR 3161. Introduction to Engineering Materials. (3) Prerequisites: CHEM 1101 and MATH 2171. Classifications of engineering materials. Introduction to property structure relationships. Ideal and defect atomic structures of solids with examples from metals, ceramics and polymers. Cold working and annealing effects. Phase equilibria in alloys; introduction to diffusional processes and transformation kinetics. *(Fall)*

MEGR 3162. Mechanical Behavior and Strengthening of Solids. (3) Prerequisite: MEGR 3161, with a grade of *C* or better. Mechanical properties of materials including elastic behavior, plastic flow, fracture, creep, fatigue, elevated temperature effects. Correlation of properties with atomic and microscopic structure. Dislocation theory and its application to mechanical behavior and strengthening mechanisms. Alloy hardening effects; effects of processing and heat treatments. Applications in Fe-C alloys. *(Spring)*

MEGR 3210. Automotive Power Plants. (3) Prerequisite: MEGR 3112, with a grade of *C* or better. Energy analysis of internal and external combustion engines for vehicular propulsion. Thermodynamic principles for combustion efficient use of fuel combustion, different types of fuel use, and pollutant control. *(Alternate years)*

MEGR 3214. Refrigeration and Air Conditioning. (3) Prerequisites: MEGR 3112 and 4111, both with a grade of *C* or better. Thermodynamics and heat transfer applied to analysis, design of cooling/heating systems. *(Spring)*

MEGR 3221. Machine Analysis and Design I. (3) Prerequisite: MEGR 3126 and ESGR 3141, both with a grade of *C* or better. Technical application of basic principles of mechanical science to analysis of machines and mechanical systems. Methods of design of typical machine elements. Strength and deflection requirements. *(Fall)*

MEGR 3222. Machine Analysis and Design II. (3) Prerequisite: MEGR 3221, with a grade of *C* or better. Synthesis of machines and mechanical systems. Analysis, creative design and selection of machines and machine elements. *(Spring)*

MEGR 3253. Senior Design I. (2) Prerequisite: MEGR 3154, with a grade of *C* or better. Corequisite: senior standing in Engineering. First of a two-semester sequence leading to a major integrative experience in applying mathematics, basic science and engineering science to the practice of engineering. *(Fall)*

MEGR 3254. Senior Design II. (3) Prerequisite: MEGR 3253, with a grade of *C* or better. A continuation of MEGR 3253 including project execution leading to an oral presentation and final written report. *(Spring)*

MEGR 3299. Professional Development. (1) An examination of various aspects of engineering as a profession. The course will be graded on a *Pass/No Credit* basis. *(Fall, Spring)*

MEGR 3695. Mechanical Engineering Cooperative Education Seminar. (1) Required of Co-op students during semesters immediately following each work assignment for presentation of engineering reports on work done the prior semester. *(Fall, Spring, Summer)*

MEGR 3890. Individualized Study. (1-3) Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. May be repeated for credit. *(On demand)*

MEGR 3990. Undergraduate Research. (1-4) Prerequisite: consent of the Department. Independent study of a theoretical and/or experimental problem in a specialized area of mechanical engineering. Topics originate from the student or the faculty member supervising the study. May be repeated for credit. *(On demand)*

Courses for Advanced Undergraduates and Graduate Students

Additional work required for students receiving graduate credit.

MEGR 4111. Heat Transfer. (3) (3G) Prerequisites: MEGR 3112 and 3114, both with a grade of *C* or better. Steady and unsteady state heat conduction, forced and natural heat convection principles, radiative heat transfer, heat exchangers. *(Fall)*

MEGR 4112. Intermediate Fluid Mechanics. (3) (3G) Prerequisites: MEGR 3111 and 3114, both with a grade of *C* or better. A continuation of MEGR 3114. Topics include boundary layers, flow over body surfaces, compressible flow, turbomachinery and propulsion devices. *(Alternate years)*

MEGR 4113. Energy Conversion I. (3) (3G) Prerequisites: MEGR 3112 and 3114, both with a grade of *C* or better. Corequisite: MEGR 4111. Application of principles of thermodynamics, fluid flow and heat transfer to internal combustion engines, compressors, turbines, heat exchangers, refrigeration, cryogenics. *(Fall)*

MEGR 4127. Introduction To Robotics. (3) (3G) Prerequisites: MEGR 2101 or EEGR 3101. Modeling of industrial robots, homogeneous transformations, kinematics, velocities, static forces, dynamics, computer animation of dynamic models, motion trajectory planning, and introduction to vision, sensors and actuators. (Dual-listed with EEGR 4151.)

MEGR 4143. Discrete Mechanical Vibrating Systems. (3) (3G) Prerequisites: MEGR 3126 with a grade of *C* or better. Free and forced vibrations of lumped parameter systems with multi-degrees of freedom. Topics include transient and steady state response, determination of natural frequencies and mode shapes with and without damping. Introduction to principal coordinates and matrix iteration techniques. *(Fall)*

MEGR 4144. Intermediate Dynamics. (3) (3G) Prerequisites: ESGR 2142 and MATH 2171, both with a grade of *C* or better. Further studies in dynamics of particles and rigid bodies, with engineering applications. Introduction to Lagrange's equations of motion. Multi-degree-of-freedom vibrations. *(Alternate years)*

5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission. See pages 378-379 for complete course descriptions.

College of Nursing

Dean: To be named; *Dean Emeritus:* Brocker; *Professors Emeritus:* Smith, Caddell; *Associate Professors Emeritus:* Andrews, Clinton; *Professors:* Jernigan, Nicholson; *Associate Professors:* Boggs, Carper, Curran, Fray, Head, Janken, Mauldin, Mayo, Reiber; *Assistant Professors:* Anderson, Edwards, Glenn, Gutmann, Hardin, King, Maynard, Moore, Newman, Ohashi, Ruth, Sanders, Summers, Tumulty; *Lecturers:* Carveth, Chiles, Doyle, Rosenstrauch, Smith

Purpose. The aims of the College of Nursing are to provide professionally recognized undergraduate and graduate programs, outreach services, and research and professional activities to advance nursing science and the profession.

Programs. Degrees awarded through the College of Nursing are the Bachelor of Science in Nursing (B.S.N.) and the Master of Science in Nursing (M.S.N.). Programs are accredited by the National League for Nursing and approved by the State Board of Nursing of North Carolina. See pages 395-399 for information regarding the M.S.N. degree.

BACHELOR OF SCIENCE IN NURSING: GENERAL POLICIES

The Bachelor of Science in Nursing degree (B.S.N.) is composed of a minimum of 120 semester hours. The program may be completed in four academic years or eight semesters of full-time study. The program can also be completed through a plan for part-time study.

Nursing and general education courses are arranged to provide a continual interchange of theory and practice. The curriculum of the College of Nursing proceeds in a series of planned sequential learning experiences that involve the student in the teaching-learning process and permit development of the intellectual processes of inquiry, analysis, synthesis and creativity.

Immunization and Status of Health. Prior to participation in clinical experiences, all students must submit evidence of a physical examination, including specific communicable disease screening, and a tine test. The tine test must be repeated and results submitted on an annual basis for as long as the student is enrolled in clinical courses.

CPR Certification. For all clinical courses, it is the student's responsibility to obtain and maintain CPR Certification (adult, infant and child) for health care providers.

Requirements for Progression in the Nursing Program. In order to promote the progression of safe practitioners from one level to the next within the College of Nursing and eventually into the nursing profession, students:

1. Are required to have an overall GPA of at least 2.5 and to complete ENGL 1101; CHEM 1103, 1104; STAT 1222; PSYC 1101, 3151; BIOL 2259, 2273 and 2274; SOCY 1101, 2132; and NURS 1100 in order to enroll in all clinical nursing courses at the 3101 level or higher.
2. May have only four semester hours of *D* credit in general education requirements or prerequisites for the nursing major; none of these four hours may be in required natural science courses.
3. Must achieve a grade of *C* or better in each nursing course. In clinical courses the student must achieve at least a *C* in the class and a *Satisfactory* in the clinical component.
4. Are permitted to repeat a nursing course only once and may repeat only one nursing course during matriculation in the nursing major. Taking a challenge examination constitutes one attempt at the course. A student who repeats a nursing course and does not achieve at least a *C* is ineligible to continue enrollment in the College of Nursing. A student dismissed from nursing under this policy has the right to use the readmission appeal process.
5. Are required to complete all junior level nursing courses and achieve a GPA of at least 2.0 overall and in the nursing major in order to enroll in senior level nursing courses.
6. Must achieve a GPA of at least 2.0 in the nursing major to graduate.

B.S.N. PATHWAY OPTION FOR REGISTERED NURSES

The Pathway Option is an upper-division program for registered nurses leading to a B.S.N. degree. After completing the prerequisites, whether at UNCC or by transfer, the student must meet the following criteria for progression to the nursing component:

1. Current licensure to practice in North Carolina or the state identified for clinical practice by faculty.
2. Overall grade point average of 2.5 on all lower division courses applied to the degree.
3. A letter of recommendation from employer.

4. At least one year of work experience within the five years prior to enrollment.
5. Pass the "Examination for Credit" prior to beginning the clinical coursework.
6. Refer also to requirements for progress in the Nursing Program contained in Bachelor of Science in Nursing: General Policies.

The curriculum is designed to build upon the registered nurse's experience, knowledge, needs and goals. Although the overall goals of the curriculum are the same as the Generic Option, the process of attainment of these goals is different. The upper division nursing courses of the program of study can be completed in one academic year of full-time study.

Curriculum Requirements

			Semester Hours
1. All prerequisite and UNCC general education courses equivalent to the freshman and sophomore years of the Generic Option.			63-71
2. Nursing	NURS 3220	6 credits	
	NURS 3230	7 credits	
	NURS 3240	7 credits	
	NURS 3250	6 credits	
	NURS 3191	2 credits	
	NURS 3992	2 credits	
	Credit by exam	30 credits	60
			123-131

CURRICULUM OUTLINE: B.S.N. GENERIC TRACK

(To be completed by those students who entered the junior year prior to the 1991-92 academic year)

Freshman Year

ENGL 1101* (Goal I) 3	ENGL 1102 (Goal I)* 3
MATH 1100 or 1101 (Goal II) 3	STAT 1220, 1221, or 1222* (Goal II) 3
PSYC 1101* (Goal VI: C) 3	CHEM 1104 or 1102* (Goal IV) 4
CHEM 1103 or 1101* (Goal IV) 4	Foreign Language** (Goal I) 4
Foreign Language (Goal I) 4	Elective (Goal VI: X) 3

Sophomore Year

BIOL 2259* 4	BIOL 2274* 4
BIOL 2273* 4	SOCY 2132* (Goal VI: C) 3
PSYC 3151* 3	NURS 1100* (***) 3
SOCY 1101* (Goal III) 3	Elective (Goal V: L) 3
Elective (Goal I: W) 3	Elective (Goal V: A) 3

Junior and Senior Years

Level I

NURS 3105 6
NURS 3107 2
NURS 3109 2
NURS 3111 3

Level II

NURS 3106 7
NURS 3108 2
NURS 3110 3
NURS 3112 3

Level III

NURS 3205 7
NURS 3207 2
NURS 3209 2
NURS 3211 3

Level IV

NURS 3206 7
NURS 3208 3
NURS 3210 2
NURS 3212 3

(To be completed by those students who enter the junior year during or after the 1991-92 academic year.)

Freshman Year

ENGL 1101 (Goal I)* 3	ENGL 1102 (Goal I) 3
MATH 1100 or 1101 (Goal II) 3	STAT 1220, 1221, or 1222* (Goal II) 3
PSYC 1101 (Goal VI: C)* 3	CHEM 1104 or 1102* (Goal IV) 4
CHEM 1103 or 1101* (Goal IV) 4	Foreign Language** (Goal I) 4
Foreign Language (Goal I)** 4	

Sophomore Year

BIOL 2259* 4	BIOL 2274* 4
BIOL 2273* 4	SOCY 2132* (Goal VI: C) 3
PSYC 3151* 3	NURS 1100* (***) 3
SOCY 1101* (Goal III) 3	Elective (Goal V: L) 3
Elective (Goal I: W) 3	Elective (Goal V: A) 3

Junior and Senior Years

Level I

NURS 3101: Concepts and Skills for Professional Nursing 5
NURS 3103: Pharmacology in Health and Illness (a) 3
NURS 3104: Nutrition in Health and Illness (a) 2
NURS 3113: Health Assessment 3
NURS 3114: The Nursing Profession (a) 2

Level II

NURS 3200: Research and Theoretical Foundations of Nursing 3
NURS 3201: Nursing Care of the Childbearing Family 5
NURS 3202: Nursing Care of Children 5
NURS 3203: Nursing Care of the Adult I 6

Level III

NURS 3251: Advanced Professional Issues and Roles 3
NURS 3252: Community Health Nursing 5
NURS 3253: Nursing Care of the Adult II 6
NURS 3254: Mental Health Nursing 5
NURS 4090: Selected Topics in Nursing 2

* Prerequisite to Nursing

** Students may need to complete one or both of these courses based on results of foreign language proficiency testing. Completion of these courses would require additional credit hours beyond the 120 hours.

***_Human Development Throughout the Life Span_ or any comparable course will meet this requirement.

(a) May also be taken during the sophomore year if prerequisites are met.

NURSING (NURS) COURSE DESCRIPTIONS

Courses for Undergraduates

NURS 1100. Growth and Development. (3) Study of the developing person through the life span by examining the relationship of selected environmental and social factors to human growth and development. Consideration of the meaning of health and illness to the individual, the family, and the community within the context of life as a continuing, dynamic process from conception through death. *(Fall, Spring)*

NURS 3101. Concepts and Skills for Professional Nursing. (5) Prerequisites: completion of all courses prerequisite to first semester of the junior year. Concepts, skills and attitudes fundamental to professional nursing practice within a framework for clinical decision-making. Nurse-client relationship viewed from a holistic perspective with emphasis on the client's adaptive responses in health and illness. Various clinical practice settings are utilized. Three class and six clinical hours weekly. *(Fall)*

NURS 3103. Pharmacology in Health and Illness. (3) Prerequisites: BIOL 2274, 2259 (prerequisite or corequisite), or permission of instructor. Presentation of theoretical base for the safe and therapeutic use of drugs. Examination of pharmacologic agents commonly used in health and illness and the standards and societal controls of drugs. Three class hours weekly. (Open to non-nursing majors.) *(Fall)*

NURS 3104. Nutrition in Health and Illness. (2) Prerequisites: CHEM 1102 or 1104, or permission of instructor. Nutrition in health and illness viewed from a life cycle perspective. Exploration of therapeutic and cultural aspects of nutrition. Two class hours weekly. (Open to non-nursing majors.) *(Fall)*

NURS 3113. Health Assessment. (3) Prerequisites: BIOL 2274, NURS 1100, or permission of instructor. Corequisite: NURS 3101 or permission of instructor. Competencies necessary for holistic health assessment across the lifespan. Evaluation of human function using interview, nursing observation, and physical examination data within a framework for clinical decision-making. Two class and three lab hours weekly. *(Fall)*

NURS 3114. The Nursing Profession. (2) Evolution of professional nursing including examination of ethical, legal, and other social models that impact on the profession. (Open to non-nursing majors.) *(Fall)*

NURS 3200. Research and Theoretical Foundations of Nursing. (3) Prerequisites: NURS 3101, 3114. Exploration of the theoretical foundations of nursing with emphasis on research theories, concepts and processes leading to their applicaton in practice. *(Spring)*

NURS 3201. Nursing Care of the Childbearing Family. (5) Prerequisites: Level I courses. Corequisite: NURS 3200. Development of competencies for the nursing care management of childbearing families with emphasis on the nurse's role in health assessment, health promotion, and promotion of adaptive processes for childbearing families. Sociocultural, economic, political, and ethical factors that impact on health promotion, disease prevention, and risk reduction for the childbearing family are examined. Selected settings are utilized for clinical practice. Five hours of class weekly for seven weeks, two hours of clinical seminar and 13 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3202. Nursing Care of Children. (5) Prerequisites: Level I courses. Corequisite: NURS 3200. Development of competencies for the nursing care management of children experiencing potential and actual alterations in health with emphasis on the nurse's role in health assessment, health promotion, and promotion of adaptive processes for the child within the context of the family. Selected settings are utilized for clinical practice. Five hours of class weekly for seven weeks, two hours of clinical seminar and 13 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3203 Nursing Care of the Adult I. (6) Prerequisites: Level I courses. Corequisite: NURS 3200. Development of selected competencies for nursing care management of adult clients with predictable human responses to specific system alterations. Risk reduction, recovery, and rehabilitation of clients with selected disease processes are addressed within the ethic of caring. Selected setting are utilized for clinical practice. Six hours of class weekly for seven weeks, two hours of clinical seminar and 16 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3205. Nursing Process III. (7) Prerequisites: all junior-level required nursing courses. Concepts introduced in Levels I and II are reinforced and expanded. Implemention of nursing process with individuals, families and communities experiencing multiple, complex health problems. Acute, long term and other community settings are used for clinical practice. *(Fall) (Discontinued after 1991-92)*

NURS 3206. Nursing Process IV. (7) Prerequisites: NURS 3205, 3207, 3209 and 3211. Concepts introduced in Levels I, II and III are reinforced and expanded. Synthesizes previously acquired knowledge in selected practice settings. *(Spring) (Discontinued after 1991-92)*

NURS 3207. Nursing Roles III. (2) Prerequisites: all junior-level required nursing courses. Management theory and teaching-learning theory in client-care situations. Analysis of the characteristics of the health care system in relation to the health status of clients. The student develops a nursing research proposal. *(Fall) (Discontinued after 1991-92)*

NURS 3208. Nursing Roles IV. (3) Prerequisite: NURS 3207. Role theory, sociopolitical process, research and current trends and issues in nursing. Incorporation of knowledge of the sociopolitical processes into professional behavior. Students critique nursing research. *(Spring) (Discontinued after 1991-92)*

NURS 3209. Communication Process III. (2) Prerequisites: all junior-level required nursing courses. Continuation of Communication Process II. Utilizes nurse-client relationship in intervening with clients who have problematic behavior patterns. Mental health disorders and individual, group and family therapies. *(Fall) (Discontinued after 1991-92)*

NURS 3210. Communication Process IV. (2) Prerequisite: NURS 3209. Use of communication skills in a variety of health care situations. Communication skills for the nurse in the leadership position, both in the nursing profession and as a member of the community. *(Spring) (Discontinued after 1991-92)*

NURS 3211. Adaptive Process III. (3) Prerequisites: all junior-level required nursing courses. Study of adaptive processes is extended to include multiple, complex problems related to situational crises affecting clients of all ages. Pathophysiology and effects of altered states of health on individuals, families, the community and the health care system. *(Fall) (Discontinued after 1991-92)*

NURS 3212. Adaptive Process IV. (3) Prerequisites: NURS 3205, 3211. Concepts related to health are expanded to include changing social needs, values, health problems and issues. Synthesis of knowledge of adaptive processes through nursing management of clients at varying points on the health-illness continuum. Each student will evaluate his/her impact on the health status of the family followed since Level I. *(Spring) (Discontinued after 1991-92)*

NURS 3251. Advanced Professional Roles and Issues. (3) Prerequisite: Level II courses. Exploration of societal and professional trends and issues affecting nursing and health care. Leadership strategies within the profession and practice of nursing. Principles and implementation strategies of health care management within organizational systems. Three hours of class weekly. *(Spring)*

NURS 3252. Community Health Nursing. (5) Prerequisites: Level II courses. Development of competencies for the nursing care management of culturally diverse individuals, families, and populations within communities with emphasis on the nurse's role in health promotion and maintenance. Particular focus on risk identification and reduction throughout the life span. Multiple community-based agencies are utilized. Five hours of class weekly for seven weeks, two hours of clinical seminar and 13 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3253. Nursing Care of the Adult II. (6) Prerequisites: Level II courses. Focus on selected competencies for designing comprehensive nursing care management of adult clients with complex and unpredictable human responses to specific system alterations. Selected settings are utilized for clinical practice. Six hours of class weekly for seven weeks, two hours of clinical seminar and 16 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3254. Mental Health Nursing. (5) Prerequisites: Level II courses. Development of competencies necessary for the practice of mental health nursing with emphasis on the use of self in relationships with clients and health team members. The nurse-client relationship provides the framework for exploring the factors impacting the behavior of clients. Selected settings are utilized for clinical practice. Five hours of class weekly for seven weeks, two hours of clinical seminar and 13 hours of clinical weekly for seven weeks. *(Fall, Spring)*

NURS 3895. Independent Study in Nursing. (1-4) Prerequisite: permission of the instructor. Directed individual study in a selected aspect of nursing which is explored in greater depth than included in the planned curriculum. May be repeated for additional credit as focus of the study varies. No more than six hours in NURS 3895 and/or 4090 may be counted toward degree requirements. *(On demand)*

PATHWAY OPTION FOR REGISTERED NURSES

(Curriculum changes for the Pathways Option will be implemented during the 1992-93 academic year.)

NURS 3191. Research in Nursing I. (2) Prerequisites: completion of all required Level III courses. Introduction to research in nursing and related areas and development of a preliminary proposal. *(Fall) (Discontinued after 1991-92)*

NURS 3220. Trends and Issues in Nursing Practice. (W) (6) Prerequisites: completion of required general degree courses and related social and physical sciences and permission of the College of Nursing. Corequisite or prerequisite: NURS 1100. Examines those historical, demographic, social and educational changes influencing the professional status of nursing; analysis of nursing roles including the legal, ethical and theoretical perspectives of these roles. Skills necessary to implement the nursing process are learned through seminar, clinical practice and self-directed study. *(Fall) (Discontinued after 1991-92)*

NURS 3230. Nursing Process—Health Assessment. (7) Prerequisite: satisfactory completion of NURS 3220. Health factors that influence health. Nursing assessment skills including physical and psychosocial assessment are utilized to determine the health status of selected individuals. Students define specific learning objectives, select the setting for clinical application and negotiate with a preceptor and the instructors for a learning contract. *(Fall) (Discontinued after 1991-92)*

NURS 3240. Nursing Process in Family and Community Health Settings. (7) Prerequisite: NURS 3230. Knowledge of crisis intervention, community health theory, health care systems and client nursing regimens. Independent study, seminars and clinical practice in the community. *(Spring) (Discontinued after 1991-92)*

NURS 3250. Leadership Roles in Nursing. (6) Prerequisite: NURS 3240. Skills in critical thinking to evaluate organizations and systems and their influence on nursing practice. Application of scientific problem solving method and change theory when appropriate leadership styles are identified and assessed. The concept of learning as a lifelong process is reinforced. Seminars, independent study and clinical practice. *(Spring) (Discontinued after 1991-92)*

NURS 3895. Independent Study in Nursing. (1-4) Prerequisite: permission of the instructor. Directed individual study in a selected aspect of nursing which is explored in greater depth than included in the planned curriculum. May be repeated for additional credit as focus of the study varies. No more than six hours in NURS 3895 and/or 4090 may be counted toward degree requirements. *(On demand)*

NURS 3992. Research in Nursing II. (2) Prerequisite: NURS 3191. Study of a nursing problem using the research method. *(Spring) (Discontinued after 1991-92)*

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

NURS 4090. Topics in Nursing. (1-3) (1-3G) Prerequisite: permission of the instructor. Critical examination of selected current topics in nursing. *(Fall)*

NURS 5170. Computer Applications in Nursing. (3) (3G) A study of the use of computers in the field of nursing. Emphasis is placed upon analysis and application of computer systems in nursing administration, nursing education, and nursing research. *(Yearly)*

Special Programs

Interdisciplinary Honors Program

Coordinator: Professor Bush

The purpose of the Interdisciplinary Honors curriculum is to provide intellectual excitement for students, to fill some of the gaps created through traditional disciplinary learning, and to encourage concerned, globally-aware citizenship. Courses fit within the theme, "Issues for Human Survival in the 21st Century," and are designed to confront political, economic, ecological, gender, race, justice, and human rights related issues and their impact on the global community and the human condition. In every case, courses include a strong humanities component with special emphasis on historical perspectives and creative literary and artistic works.

The program consists of four facets:

1. A four-course sequence dealing with issues for human survival in the 21st century: HONR 1701, HONR 1702, HONR 3701 and HONR 3702.
2. Four credit hours of HONR 2701, Enrichment Seminar.
3. A 60 clock-hour community service laboratory; HONR 2750.
4. Senior project; HONR 3790.

Interdisciplinary Honors courses are team taught by faculty members from different disciplines and classes are normally limited to 20 students in order that students develop their creative talents to the fullest extent possible. To this end, Interdisciplinary Honors students are encouraged to live in the Honors College, a residence life facility within Phase VI housing which provides an environment conducive to study and learning. In order to facilitate learning, the "commons" area of the Honors College contains a computer room for student use and study/classroom facility. Students also receive invitations to participate in special activities such as luncheons with the chancellor and visits to the Charlotte Symphony and Opera and Discovery Place.

Admission. The Interdisciplinary Honors Program is open to any student at the University who applies to the Program expressing a desire to participate in the interdisciplinary studies offered. In order to graduate with Interdisciplinary Honors, students must maintain a 3.0 GPA overall and 3.5 GPA in Interdisciplinary Honors courses. Additional information and details are available at the Interdisciplinary Honors Office.

INTERDISCIPLINARY HONORS (HONR) COURSE DESCRIPTIONS

HONR 1701. War, Peace, Justice and Human Survival. (L) (3) Relationships between individual and local, state and global values examined within the context of war, peace and justice. Special emphasis on problems emergent with the introduction of nuclear weapons and the threat of nuclear war. *(Fall)*

HONR 1702. Economic Welfare and International Communities. (L) (3) Study of the impact of economic institutions on international communities. Focus on development theories, multinational institutions, international debt and Third World response, international poverty and income distribution, and the economic impact on international communities of military spending. *(Spring)*

HONR 2701. Enrichment Seminar. (A) (2) Students attend a variety of events from the visual and performing arts as well as special lectures. Through direct contact, students are introduced to events, both contemporary and traditional, to which they would not otherwise be exposed. Short written reports and class discussion required. *(Fall, Spring)*

HONR 2750. Community Service Laboratory. (1) Laboratory experience to complement the four course Interdisciplinary Honors sequence, Issues for the 21st Century. Investigation and demonstration of how individuals can make a difference in the human condition. Examination of relationships between the volunteers and community agencies within the context of problem-solving strategies and social/political justice. Emphasis on problems emergent with the interaction between volunteers and low income, less fortunate, under-educated populations involved. Impact of volunteerism upon human rights will be explored. Class discussion required. *(Fall, Spring, Summer)*

HONR 3700. Interdisciplinary Honors Topics. (3) Prerequisite: consent of Interdisciplinary Honors Program Director. A small discussion oriented class team-taught by faculty members from different disciplines on interdisciplinary topics. *(On demand)*

HONR 3701. Science, Technology and Human Values. (L) (3) Prerequisites: HONR 1701 and 1702. Study of historical and contemporary issues between science and technology, on the one hand, and ethical, religious and social concerns on the other hand. *(Fall)*

HONR 3702. Human Rights and Social Justice. (WC) (3) Prerequisites: HONR 1701, 1702. Multicultural examination of the foundations of laws which govern human communities and the means by which their authority is legitimated. Consideration of justice and human rights concepts from the perspectives of a variety of intellectual traditions. *(Spring)*

HONR 3790. Interdisciplinary Honors Thesis. (3) Prerequisites; six hours of honors coursework and consent of thesis director and Interdisciplinary Honors Committee. Honors project directed by faculty member. May be repeated for credit. *(On demand)*

International Studies

Director: Professor Josephson

The Center for International Studies offers a minor that allows undergraduate students to pursue an interdisciplinary and comparative study of foreign cultures and societies while they fulfill the academic requirements for a major in one of the approved University degree programs. A program of study fulfilling this option may be viewed topically (with focus on subjects such as world population, poverty, violence, or war and peace studies) or geographically (with focus on the Soviet Union, Western Europe, Africa, Asia, or Latin America).

Students who minor in International Studies may choose from a variety of courses and disciplines, including foreign languages, humanities, social sciences, and business. Students plan their individual programs of study with their department advisers and the Director of the Center for International Studies. The minor is designed to provide students with cultural and intellectual enrichment for more rewarding lives in an increasingly interdependent world. The program is of particular value to those with career objectives in government, business, trade, finance, law, journalism, teaching, military service, and health. It also serves those who will seek employment with international agencies such as the United Nations and with private religious and humanitarian service organizations.

Study Abroad. Students who take advantage of the study abroad opportunities provided by the Center for International Studies may apply their overseas study credits to the minor, or where appropriate, to their major.

INTERNATIONAL STUDIES MINOR

Students seeking a minor in International Studies must fulfill general University degree requirements, requirements for a selected major, and coursework as outlined below. Transcripts of students satisfactorily completing their program will bear the statement, "Minor in International Studies." It also is required that students have at least a 2.5 average in their courses within the international minor.

Specific course requirements include:

I. Six (6) hours introductory coursework selected from the following:

   GEOG 1101 World Regional Geography; POLS 1150 Introduction to International Politics; HIST 1000 The World Since 1945; ANTH 1101 General Anthropology

II. Foreign Language 2202 or equivalent. In the case of a non-Western language, two semesters or the equivalent of individualized foreign language instruction will fulfill this requirement.

III. 12 hours of related coursework chosen from an extensive list of courses approved for the minor or other appropriate courses approved by the Director of the Center for International Studies.

Complete information about the minor in International Studies as well as lists of all courses which may be applied toward the minor may be obtained from the Director of the Center for International Studies, Denny 114, 547-2442.

STUDY ABROAD

UNC Charlotte encourages its students to choose the opportunity to study and live in a foreign country as a part of their undergraduate careers. The Center for International Studies offers UNCC students the opportunity to study and travel abroad for a year, a semester or a summer. Programs are available in countries virtually all over the world. A semester or year abroad need not cost much more than a semester or year at UNCC. Students may receive academic credit for all courses taken while overseas, and no time need be lost toward graduating on schedule. Study abroad may satisfy up to six semester hours of GOAL VI (X) of the UNCC General Education requirements. (See page 67 for further information.) Knowledge of a foreign language is not required to study abroad. UNCC has sent students in architecture, business, arts and sciences, engineering, education and nursing on its study abroad programs.

Students are encouraged to begin planning for study abroad while they are freshmen or sophomores. The study abroad experience usually takes place during the junior or senior year. Regular UNCC financial aid is often applicable to study abroad.

The Center for International Studies assists students in choosing and applying for study abroad programs. It also provides cross-cultural orientation and re-entry (to the United States) assistance.

INTERNATIONAL STUDENT EXCHANGE PROGRAM (ISEP)

UNCC is one of approximately 80 U.S. institutions of higher education which are members of the International Student Exchange Program. This program allows the UNCC student to exchange with students from Africa, Asia, Australia, Canada, Europe and Latin America. The students pay their regular tuition, fees, room and board at UNCC and exchange places for the year with students from institutions outside the United States who have similarly covered their costs. The student is registered at the foreign institution, taking the same courses, having the same assignments and participating in the same activities as all other students at that institution. This program permits the student to be exposed daily to a different set of cultural values, to new ideas and new world views. ISEP exchanges are small in scale, with only a few students going to each foreign institution.

Further information about the Study Abroad or International Student Exchange programs may be obtained from the Center for International Studies.

ENGLISH LANGUAGE TRAINING INSTITUTE

The English Language Training Institute (ELTI) provides intenstive English instruction for international students planning to attend American universities or colleges and for individuals pursuing professional training in the United States. ELTI holds three sessions per year and offers four language proficiency levels. Class size is limited to 15 students and students attend classes about 20 hours per week. Exceptional students in Level 4 may take University courses which carry academic credit.

Further information about ELTI may be obtained from the ELTI program director in the Center for International Studies.

Other Special Programs

CHARLOTTE AREA EDUCATIONAL CONSORTIUM

Full-time undergraduate students may enroll in courses *not offered at UNC Charlotte* which are offered at other participating institutions in the Charlotte Area Educational Consortium without paying additional tuition and fees. The courses appear on the student's UNCC transcript and are computed in his/her grade point average. Members of the consortium are: Barber-Scotia College, Belmont Abbey College, Central Piedmont Community College, Davidson College, Gaston College, Johnson C. Smith University, Queens College, UNCC, Wingate College, Winthrop College and York Technical College. (See page 54 of this *Catalog* for registration procedures.)

COOPERATIVE EDUCATION AND EXPERIENTIAL LEARNING PROGRAMS

Opportunities are available for both undergraduate and graduate students to receive course and/or degree credit for faculty supervised experiences in public and private agencies within the community. These opportunities are offered through various types of experiential learning programs including

clinicals, cooperative education, internships, practica and service-learning internships. Course descriptions pertaining to these programs are included in the courses of study of the offering department or college.

Cooperative Education. Cooperative Education is a year-round study-work plan of education in which students alternate periods of attendance at The University with periods of employment in jobs related to their major interest. Some departments offer an option of parallel work and study. This type of program has been used successfully for many years by colleges and universities throughout the United States. The program is designed to provide practical experience under conditions that The University cannot duplicate.

The work assignments are usually for a 40-hour week for a semester and are paid by the employer at a rate appropriate to the student's development. Some students find that they can meet most or all of their college costs with income from their Co-op assignments. The work assignments are monitored by both the employer and a faculty adviser to assure that they relate to and progress as the student's education progresses. Students usually stay with the same employer but this is not necessary. Many students find the Co-op experience an aid in obtaining their first job—very often with the company or agency with which they had a Co-op assignment. Academic credit may or may not be granted for Co-op work. While working, the Co-op student is enrolled in The University, considered a full-time student, and eligible for student activities.

The Cooperative Education Office works with the faculty of the participating colleges to administer the program. Academic requirements and supervision are provided by the student's college and these vary with the college. The Co-op office works with employers and approved Co-op students to find suitable work opportunities. Co-op students are required to have better grade averages than The University requires for all students. For further information, inquiries can be made of the various colleges or the Experiential Learning/University Cooperative Education Office.

Internships. Students may receive academic credit for semester-long, supervised work experiences in public or private community organizations. The amount of credit is determined by the nature of the internship assignment and the number of hours worked each week.

Practica. Psychology majors have opportunities to receive academic credit for working in practical settings related to psychology. Each practicum is conducted under the supervision of a faculty member and an agency representative.

Service-Learning Internships. Students may participate in internship experiences designed specifically to serve the needs of the community while providing learning opportunities for students. The *Internship Program in Community Education and Services* is designed as an area-wide program with academic credit. The overall objectives of the service-learning program are to identify relationships between the student's academic program and the problems and prospects of modern urban communities; to enable students to become involved in solving problems of the urban community; to provide manpower for governmental and service agencies in local metropolitan communities; to encourage youth to consider careers and/or citizen leadership in urban administration and service; and to establish a closer relationship between institutions of higher education and the Charlotte area communities by making the resources of The University more accessible to the community and by providing a basis for keeping curriculum, teaching and research relevant to the needs of the community and society.

Interns may receive from one to 15 semester hours credit, with grading on a *Pass/No Credit* basis, for successful completion of ARSC 3400 (Non-Residential Studies). For additional information about this opportunity, contact the Office of the Dean of Arts and Sciences. Also, see Arts and Sciences course descriptions for ARSC 3400.

NATIONAL STUDENT EXCHANGE

The National Student Exchange Program offers an educational opportunity for sophomores and juniors at UNC Charlotte. Students can exchange for up to a year of study at one of approximately 100 colleges and universities throughout the United States through simplified admission processes, assurance of transferability and minimum cost. Through this program, students are able to take advantage of areas of academic specialization and strength at other universities while exploring unique cultural, geographical and social experiences normally not available to them. Students experience different learning styles, lifestyles and values which develop from varied academic and geographical settings. Any full-time student with a 2.5 GPA or better and who will be a sophomore

or junior at the time of exchange is eligible to participate. Applications should be completed by February for the following fall or spring semester. For more information, contact the National Student Exchange coordinator in the Office of Experiential Learning.

HONORS PROGRAMS

Involvement in honors work at UNC Charlotte may take two principal forms. The Interdisciplinary Honors Program is a broad-based program designed to give its students the more liberal education achieved through study of global interdisciplinary subjects normally falling outside traditional disciplines. Its goal is to prepare students with global awareness and concern about the issues for human survival in the 21st century. The program is a four-year sequence of study beginning with the freshman year but it can be completed in as little as two years.

Students with majors in biology, chemistry, history, mathematics, political science, performing arts, physics, psychology and visual arts may graduate with departmental honors. All departmental programs require research and thesis or some form of senior project. Some also require additional coursework or activity.

Honors Certification: University Requirements. To qualify for graduation with honors recognition in a specific program, a student is required to (a) have at least a 3.5 GPA for all honors courses completed in the program; (b) complete an acceptable honors thesis; (c) receive at least three hours of *A* for their honors thesis research; (d) be recommended by the program's Honors Committee for graduation with honors; and (e) complete any additional requirements specified for the program.

INTER-INSTITUTIONAL REGISTRATION

Full-time undergraduate and graduate students may enroll in courses *not offered at UNCC* which are offered at other participating institutions without paying additional tuition and fees. The courses appear on the student's UNCC transcript and are computed in his/her grade point average. Members of the inter-institutional registration program are: University of North Carolina at Greensboro, North Carolina State University, University of North Carolina at Chapel Hill and Duke University. (See page 54 of this *Catalog* for registration procedures.)

PREPARATION FOR PROFESSIONAL SCHOOLS

Students may begin preparation at UNC Charlotte for a number of professional careers. Depending upon the professional school's requirements, the student may wish to take a degree at UNCC or to transfer after one, two or three years.

Preparation for the following programs is offered: chemical engineering, dentistry, forest resources, law, medical technology, medicine, optometry, pharmacy, and veterinary medicine.

The student who plans to enter a professional school is advised to plan his/her program so that general requirements for the bachelor of arts or bachelor of science degree are met in addition to the requirements for the professional program being considered. The student planning to attend a professional school should inform his/her adviser of his/her plans. The student should become familiar with the requirements of the school which he/she plans to attend.

Chemical Engineering. Students seeking a program in chemical engineering should consult the Department of Chemistry for advice concerning available options. However, those students desiring to obtain the Bachelor of Science in Chemical Engineering degree may do so by transferring to North Carolina State University after spending two years at UNC Charlotte. *To be eligible for such transfer, the student must meet the admissions requirements for transfer at North Carolina State University.* After transfer, an additional two years normally will be required for the degree.

The following courses are ones which most closely resemble courses suggested for chemical engineering students at North Carolina State University.

First Year

Chemistry 1101, 1101L, 1102, 1102L (or 1106L)
Engineering 1100
English 1101 and 1102
Mathematics 1141, 1142
Physics 2221, 2221L
Mechanical Engineering 1102
Physical Education (two semesters)
*Elective (one semester)

Second Year

Chemistry 2131, 2131L, 2132, 2132L
Electrical Engineering 2161, 2162
Mathematics 2141, 2171
Physical Education (two semesters)
Physics 2231, 2231L
*Electives (two semesters)

**A one-semester course in each of the following areas is required before graduation from North Carolina State University: economics, English literature, history, or philosophy of science.*

Dentistry and Medicine. The composite requirements for entrance to most medical and dental schools in North Carolina, South Carolina, Georgia, Tennessee and Virginia are as follows:

Biology ..... 8 hours
General Chemistry ..... 8 hours
Organic Chemistry ..... 8 hours
(Some schools require additional chemistry)
Physics ..... 8 hours
English ..... 8 hours

Students should check specific requirements of schools of interest.

Pre-Medical, Pre-Professional Committee. The UNCC Pre-Professional Committee consists of faculty members from throughout The University and serves as the main advisory and recommending body for UNCC students seeking entrance to health professional careers. Students should register with the committee in the biology department office by the end of their sophomore year. In order to obtain a recommendation to medical school or dental school from the committee, the student must register with the committee in the biology office by September of the year in which applications are being made. Students working toward entrance to health professional schools are advised to work closely with this committee throughout their study at UNCC. Contact the Office of Academic Affairs for the name of the committee chairperson.

Allied Health Club. Students interested in health related careers are encouraged to join the Allied Health Club. The organization sponsors speakers, volunteer opportunities in local hospitals, and trips to see admissions officers and teaching programs in schools throughout the region.

Law. The University suggests that the student planning to enter law school consider courses in such areas as English literature and composition, American history, accounting, debating, business administration, finance, business law, communications, psychology, logic and ethics, philosophy, political science, economics, mathematics, sociology, modern languages and criminal justice. Preparation should include comprehension of and expression in words, the development of a critical understanding of human institutions and values and the generation of creative power in thinking. Thus, any of a number of majors with wisely selected electives might provide the broad educational background needed.

Pre-Law Society. The UNCC Pre-Law Society is a student pre-law organization. The Society carries on a large number of activities designed to help its members decide whether they wish to attend law school: providing sessions with pre-law advisers and attorneys; taking field trips to pre-law conferences, law schools, law offices and courts; having a guest speaker program on legal and judicial topics, and working on preparations for the LSAT. Membership in the Society is open to all UNCC students, regardless of major or year at the University. For more information, contact the Department of Political Science.

Medical Technology. The University, through affiliation with several schools of medical technology, offers programs leading to baccalaureate degrees in biology and chemistry, with training in medical technology. Students interested in this four-year program are advised to check the more detailed listing under the individual departments and to consult with the appropriate adviser in the Department of Biology or Chemistry.

Optometry. There are no schools of optometry in North Carolina. Each year, however, the State of North Carolina contracts 24 spaces in out-of-state schools of optometry and partially subsidizes the tuition costs for the students that it selects to attend these schools. Information on these contract programs in optometry may be obtained from General Administration of The University of North Carolina.

For admission, the contract schools require programs similar to the one given here, consisting of at least 90 semester hours of coursework:

English 1101 and 1102
Mathematics 1103, 1141, 1142, Statistics 1121
Biology 1101 and 1115 or 2223 and 3111, 1259 or 4255, 4273, 4293
Chemistry 1101 and 1102, 2131 and 2132
Physics 1101 and 1102
Psychology 1101
Social Science: 2 courses

Science courses should include appropriate laboratories.

Advising for students interested in pre-optometry preparation is available in the Departments of Biology, Chemistry and Physics.

Pharmacy. Students planning to seek a Bachelor of Science in Pharmacy degree may spend either one or two years at UNC Charlotte. One year is recommended for students transferring to a four-year pharmacy school; two years are recommended for students transferring to a three-year pharmacy school such as The University of North Carolina at Chapel Hill.

The following courses are equivalent to those required for transfer into the pharmacy school at UNC-Chapel Hill:

English 1101 and 1102
Mathematics 1141, 1103 (if taken before 1141)
Foreign Language: through 2201
Biology 1110 or 2233 and 2273 + L
Chemistry 1101 + L, 1102 + L, 2131 + L, 2132 + L
Physics 1101 and 1102

Students must select one course from each of the following groups for a total of four courses:

Group 1: English 2101, 2102, 2104, 2111, 2112; Theatre 1101; Music 1132
Group 2: Religion 1101; Philosophy 2101
Group 3: Economics 2101
Group 4: History 1120, 3101, 3102
Physical Education: Two semesters of physical education activities are required.

Veterinary Medicine. Through careful planning with their academic advisers, it is possible for UNCC students to meet the requirements for admission to the School of Veterinary Medicine at North Carolina State University.

The following UNCC courses must be completed *by the time of application* to the School of Veterinary Medicine:

ENGL 1101, 1102 .....6 hours
MATH 1103, 1120 or 1141 .....6 hours
STAT 1221 .....3 hours
PHYS 1101 + L, 1102 + L .....8 hours
CHEM 1101 + L, 1102 + L,
2131 + L, 2132 + L, 3175 + L ....20 hours
BIOL 2233, 4166 + L
4255 + L, 4233 .....15 hours

Applicants must also have completed the following courses which are *not* available at UNCC: Medical Terminology—2 hours; and Animal and/or Poultry Science with at least one course in animal nutrition—7 hours. These courses are available through transient study from North Carolina State University or North Carolina Agricultural and Technical University.

ROTC PROGRAMS

Air Force ROTC. Students who desire the opportunity to serve as commissioned officers in the Air Force may elect to participate in the Air Force Reserve Officers' Training Corps (ROTC) Program as part of their academic program. For further information see pages 245-247.

Army ROTC. Students at UNC Charlotte may elect to participate in the Army Reserve Officers' Training Corps (ROTC) Program as a part of their academic program. For further information see pages 247-248.

VENTURE PROGRAM

Venture recognizes the natural environment as a means for developing initiative, creativity, physical health, and a sensitivity to the environment and other people. The Venture program is designed to facilitate individual growth through physical challenge, group interaction and feedback, and personal reflection. It offers a variety of non-credit courses, workshops and seminars that utilize outdoor settings to provide opportunities for active, experiential learning. On-campus facilities include a group initiative course, a high ropes course and orienteering courses.

Venture also offers courses each semester for academic credit. Outdoor, natural environments are utilized to present a series of progressively difficult problems or challenges. While course settings and activities may vary by season and safety considerations, the basic format of each course is similar. Enrollment is limited to ensure full participation and to ease our environmental impact. Outdoor skills are taught through active experience, group debriefings and personal reflections. Students are encouraged to examine lifestyles and values while developing a greater sensitivity to the needs of others. Contact the Department of Health and Physical Education for additional information.

The Graduate School

Administration

Robert W. Carrubba, *Dean of the Graduate School*

College of Architecture: Charles C. Hight, *Dean*
College of Arts and Sciences: Schley R. Lyons, *Dean*
College of Business Administration: Richard E. Neel, *Dean*
College of Education and Allied Professions: H. William Heller, *Dean*
College of Engineering: Robert D. Snyder, *Dean*
College of Nursing: To Be Named, *Dean*

The Graduate Council 1990-1991

Kent Curran, Chairperson
Robert Carrubba, Dean of the Graduate School
Roger Brown, Political Science
Michael Dyer, Graduate Student Association
Raymond Frankle, Director of the Library
David Hirschel, Criminal Justice
Gerald Ingalls, Geography and Earth Sciences
Harold Jaus, Curriculum and Instruction
Linda Moore, Nursing
Taghi Mostafavi, Computer Science
John Neill, Director of Enrollment Services
Eric Sauda, Architecture

HISTORY AND ORGANIZATION

The University of North Carolina at Charlotte was established in 1965 by the North Carolina General Assembly which transformed Charlotte College, with beginnings in 1946, into a campus of The University of North Carolina. The Graduate School was established in 1985 with the appointment of the first Dean of the Graduate School, although graduate degree programs have been offered since 1969. Today more than 300 members of the Graduate Faculty and more than 2,100 graduate students participate in a broad array of graduate programs at the master's level, in Certificate of Advanced Study programs, and in two cooperative doctoral programs. During the 1989-90 academic year, 393 graduate degrees and 24 Certificates of Advanced Study were awarded.

Beginning with the fall semester 1991, the Graduate School also offers a doctoral program, Doctor of Education (Ed.D.) in Educational Leadership.

The executive and administrative affairs of the Graduate School are carried out by the Dean of the Graduate School, who acts in cooperation with the deans of the six colleges of Architecture, Arts and Sciences, Business Administration, Education and Allied Professions, Engineering, and Nursing.

The Graduate Council, whose voting members are elected by the faculty, reviews, develops and makes recommendations concerning Graduate School policy. All curricular proposals and all criteria for membership in the Graduate Faculty come before the Graduate Council, which also creates appropriate committees and hears grievances. In addition, the Graduate Council serves in an advisory capacity to the Dean of the Graduate School.

The Graduate Faculty. In accordance with criteria developed by each graduate program or unit and approved by the Graduate Council, the Dean of the Graduate School appoints faculty members to membership on the Graduate Faculty for a renewable term of five years. Members of the Graduate Faculty offer courses and seminars and supervise research and theses at an advanced level of scholarship.

The Graduate Student Association was chartered in 1986 and serves as the official organization for UNC Charlotte graduate students, all of whom are automatically members. Its purposes include: (a) establishment of an appropriate voice for graduate students; (b) assistance with their special social, emotional, intellectual and physical needs; and (c) liaison with the administration and faculty. The GSA holds monthly meetings, sponsors social events and publishes a newsletter.

The Charlotte Graduate Center is a unit of the Graduate School administered by the Dean of the Graduate School. It operates under the policies established by the Graduate Faculty of UNCC. Its purpose is to employ the full range of resources for advanced study within The University of North Carolina to meet the needs and interests of students located within the Charlotte metropolitan area. The interinstitutional master's and doctoral programs offered are those which UNCC cannot offer solely with its own academic or financial resources.

UNIVERSITY FACILITIES AND SERVICES

UNCC, the fourth largest university in North Carolina, offers a full range of facilities and services to accommodate the needs of both its students and the community. The University serves high-tech industry as one of five university members of the Microelectronics Center of North Carolina. Outreach activities include continuing education and extension, international studies, urban research and service, a 100,000-watt FM public radio station and botanical gardens. (For further information about educational facilities, educational support services and other student services and facilities, see page 9 of this *Catalog.)*

Research Facilities. The J. Murrey Atkins Library houses an open-shelf collection of more than 490,000 bound volumes and more than 985,000 units in microform. The facility features the latest in library technology, including a computerized, on-line catalog system—the first for an academic library in North Carolina. Approximately 16,585 current periodicals and serials are received through subscription. The University's well-equipped laboratories are housed in contemporary buildings that were constructed during the last 25 years. A new $9.8-million state-of-the-art physical sciences building was dedicated in September 1985 and a $6.5 million Applied Research Center has been built.

Housing and Food Services. Room and board are available on campus for unmarried students. The cost in 1990-91 ranged from approximately $2,558 to $3,122 depending upon the options chosen. Private housing adjacent to the campus is readily available for married and single students. City transit is available to campus for students choosing to live elsewhere in the community. For more information regarding housing and food services, see pages 13-14, 43 and 45.

FINANCIAL INFORMATION

Detailed information regarding tuition, fees, financial aid, and other related topics may be found on pages 40-50 in this *Catalog* in the chapter *Financial Information.* For graduate students, financial assistance programs consist of grants, loans and employment opportunities, including graduate assistantships. Grants are generally limited to North Carolina residents in the amount of tuition and fees for full-time attendance and are funded through the State Tuition Grant program and the Minority Presence Grant program. Available loans include the 5 percent National Direct Student Loan and the 8 percent Guaranteed Student Loan. To apply for the grant and loan programs, and for employment under the federal College Work-Study Program, students should complete the Financial Aid Form of the College Scholarship Service before the established priority date of April 15 preceding the school year.

Approximately one half of the University's full-time graduate students hold graduate assistantships with award amounts ranging from $4,200 to $7,200 for two semesters. Students should contact the Graduate School office for an application form. The University also operates a Job Location and Development (JLD) Service to assist students seeking part-time and summer employment opportunities off campus. For this assistance, students should call or visit the JLD office in the UNCC Center for Student Employment and Career Services.

Graduate Assistantships. The University has a limited number of graduate assistantships in the fields of architecture, biology, business administration, chemistry, computer science, criminal justice, economics, education, engineering, English, geography, history, mathematics, political science, psychology and sociology. Such financial support will be extended to other areas of study as rapidly as resources become available. Application for a graduate assistantship should be filed in writing with the Graduate School not later than March 31 preceding the fall semester for which the assistantship is desired.

Graduate Fellowships. The Microelectronics Center of North Carolina (MCNC) has allocated a limited number of $15,000 fellowships to UNCC for outstanding students in graduate programs relevant to microelectronics. Information about MCNC Fellowships is available from the Graduate School.

North Carolina Minority Presence Grant Program. Under the University of North Carolina Board of Governors general Minority Presence Grant Program, black students may be eligible for special financial assistance if they are residents of North Carolina, enrolled for at least three hours of degree-credit coursework, and demonstrate financial need.

Employment. The Office of Student Financial Aid assists students in locating work on campus. The University participates in the federal Work-Study Program and attempts to match students with jobs related to their academic interests. Graduate students as well as undergraduate students may request University employment. However, all graduate students seeking employment must have the approval of their department heads.

Admission To The University

The University considers all applications without regard to race, color, sex, sexual orientation, national origin, handicapped status, age or religion. The University reserves the right to withhold the admission of any applicant who fails to meet any of the requirements for admission. In addition, it reserves the right to restrict enrollments when necessary because of budgetary or other constraints. Applications for either regular semester or the summer terms should be submitted and completed no later than the dates published in this *Catalog*. In some programs, the vacancies will be filled several weeks prior to those deadlines.

All applicants for admission are reviewed as soon as the required credentials are received. All relevant factors are considered, with major emphasis being placed on the academic history of the applicant. The intent of The University is to offer admission to those applicants whose credentials indicate a strong likelihood for success in their selected curricula.

Evidence of good physical and mental health is required prior to registration. A medical report form is sent to successful applicants along with the notice of admission. **As of July 1, 1986, state law requires all students entering a college in the State of North Carolina to meet the immunization requirements described on page 35.** A family physician or the Health Department must verify that the student has had necessary immunizations.

Persons seeking the application forms and information should address inquiries to:

GRADUATE SCHOOL
THE UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE
CHARLOTTE, NC 28223

ADMISSION CLASSIFICATIONS

Admission to one of these categories does not imply and should not be confused with later admission to candidacy for a graduate degree.

Full Standing. Applicants who meet the general requirements for admission to graduate study plus any specific requirements imposed by the college or department of academic concentration for the degree sought will be admitted to full standing.

Conditional Standing. Conditional admission to full standing may be granted to students who have: (a) general or special deficiencies which require remedial work; (b) degrees awarded as long as six years prior to admission; or (c) a less clearly predicted chance of success according to available criteria. Each student granted a conditional admission will be responsible for contacting his/her adviser when he/she has successfully satisfied the conditions for admission to full standing. The adviser will then be responsible for contacting the Registrar's Office in writing, concerning any change in the student's admission status.

Post-Baccalaureate Students. Students who wish to take courses beyond the baccalaureate degree for certificate renewal, for transfer to another institution, as prerequisites for admission to a graduate degree program or for personal satisfaction may be admitted as post-baccalaureate students. This classification is not open to foreign nationals who are on student visas. A post-baccalaureate student (PBS) who is subsequently admitted to full or conditional standing in a degree program on the basis of an approved regular application may, with the permission of his/her adviser, apply a maximum of six hours acceptably completed in the post-baccalaureate status toward a degree. The following policies apply to students who wish to register as post-baccalaureate students:

1. Post-baccalaureate students must have a baccalaureate degree from an accredited institution of higher education.
2. Post-baccalaureate students may register for coursework at any level for which they have the prerequisites.
3. Post-baccalaureate students will be subject to the academic regulations and standards required of degree students.
4. The PBS classification carries with it no implication that a student will be admitted to a degree program.
5. Post-baccalaureate students will be assessed tuition and fees based on the level of courses for which they are enrolled. If enrolled in any course for graduate credit, they will be assessed graduate fees for all courses.
6. A post-baccalaureate student who is subsequently admitted to a graduate degree program may request that a maximum of six hours completed for graduate credit be used for his/her program. All coursework must be approved by the student's department and listed on the student's Admission to Candidacy form.

Unclassified Students. An applicant wishing to take more than nine hours of graduate coursework and who does not intend to seek a master's degree may be admitted to full standing as an unclassified student. A completed application form, together with all supporting data, should be filed in the Graduate Admissions Office prior to the application deadline date for the term in which the applicant wishes to enroll. If such applicant meets the general criteria for admission, he/she may then be admitted to full standing as an unclassified student.

Readmission. Post-baccalaureate and graduate students whose enrollment is interrupted will remain eligible to register for two calendar years without having to reapply for admission to The University if they are in good standing and have not exceeded the six-year limit. After an absence of more than 24 months, the student must apply for readmission; acceptance is subject to departmental approval.

Students whose enrollment is terminated for academic reasons may request readmission in accordance with academic regulations published in this *Catalog.*

Transient Students. Students enrolled at other colleges and universities who have written permission from their institutions to take specified courses at UNCC in a given semester or summer term may be enrolled as transient non-degree students.

Auditors. With the consent of the instructor, any student eligible for admission may register for any class for audit. The application procedure and fees are the same as for classes taken for University credit. (See academic regulations pertaining to auditors on page 54 in this *Catalog.)*

Non-Matriculation. An applicant admitted to a degree program who fails to enroll for the term to which admitted is presumed to have withdrawn his/her application. The application may be reinstated if the request to do so is received within one year from the originally requested term of entry. This request should be in writing and addressed to the Graduate Admissions Office at least six weeks prior to the term in which the applicant desires to register.

GENERAL REQUIREMENTS FOR GRADUATE ADMISSION AT THE MASTER'S LEVEL

1. Application in writing submitted to the Graduate Admissions Office, accompanied by a $15.00 application fee, which is neither deductible nor refundable.
2. Possession of a bachelor's degree, or its equivalent, from an accredited college or university.
3. Two official transcripts of all previous academic work attempted beyond high school. Transfer credit posted on the records of other institutions is unacceptable and official transcripts of these credits must be supplied.
4. Satisfactory test scores as specified in the section of this *Catalog* entitled "Additional Requirements for Acceptance into Specific Graduate Programs."
5. An overall grade point average of at least 2.5 (based on a 4.0 scale) on all of the applicant's previous work beyond high school. The average of the major or basic courses prerequisite to the area of proposed graduate study should be 3.0 or better.
6. At least three evaluations from persons familiar with the applicant's personal and professional qualifications.
7. An essay describing the applicant's experience and objective in undertaking graduate study.
8. Acceptance into a specific program must be approved by the department or college offering the program. Meeting minimum requirements for admission does not guarantee acceptance into a program. The University reserves the right to restrict enrollments when necessary because of budgetary and other constraints including the availability of faculty expertise in a specified area of study and the enrollment limitation established by the North Carolina General Assembly.

The application for admission and supporting credentials must be received in the Office of Graduate Admissions at least 30 days prior to the first day of class for the semester in which the applicant plans to enter the Graduate School. Materials submitted in support of this application cannot be returned. Some programs have earlier deadlines and limited space.

Students who meet the foregoing requirements but do not wish to enroll in a specific degree program may be admitted to full standing as unclassified students.

Certain other applicants who satisfy prerequisites for specific courses may be admitted to those courses as post-baccalaureate students though they may not meet all the foregoing requirements. Students admitted as post-baccalaureate students who later wish to qualify for full standing must reapply for the new classification.

A person will be considered for admission to a degree program only after the application and all its supporting credentials have been filed with the Graduate Admissions Office. Any supporting credentials that are submitted without an application will be maintained on file in the Graduate Admissions Office for one year. Applications with supporting credentials will be maintained on file for one year for individuals who are admitted to degree programs but who do not enroll in the term for which their admission was processed. The applications and supporting credentials for individuals who are found not to be admissible to degree programs will be maintained on file for one year. Persons who do not submit their materials in time to be considered for admission in the term which they have requested are expected to notify the Graduate Admissions Office if they wish to be considered for admission to any subsequent term.

GENERAL REQUIREMENTS FOR GRADUATE ADMISSION AT THE SIXTH-YEAR LEVEL FOR THE CERTIFICATE OF ADVANCED STUDY (CAS)

1. Application in writing, submitted to the Graduate Admissions Office, accompanied by a $15.00 application fee, which is neither deductible nor refundable.
2. Master's degree and *B* average or better.
3. "G" Certificate or equivalent in appropriate area.
4. Two official transcripts of all graduate work sent directly to the Graduate Admissions Office from each institution attended.
5. Satisfactory scores from the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.
6. Recommendations and/or nominations from professionals who know of the applicant's work.
7. An essay describing recent professional experience in roles related to the position for which advanced certification is sought.

REQUIREMENTS FOR ACCEPTANCE INTO THE DOCTORAL PROGRAM (Ed.D.) IN EDUCATIONAL LEADERSHIP

1. Application in writing submitted to the Graduate Admissions Office, accompanied by a $15.00 application fee which is neither deductible nor refundable.
2. Possession of a bachelor's degree from an accredited institution. A master's degree is expected but not required. Each application will be considered on its own merits. Additional coursework may be required.
3. Two official transcripts of all previous academic work attempted beyond high school. Transfer credit posted on the records of other institutions is unacceptable and official transcripts of these credits must be supplied.
4. A Class A Teacher Certificate or equivalent.
5. A minimum of three years of successful teaching and/or administrative experience in K-12 within the last 10 years.
6. A record of achievement in college and on national tests which indicates a high potential for successful doctoral study, including:
   a. A GRE score within or beyond the 950-1050 range or above 1430 with the analytical score or a score above the sixtieth percentile on the Miller Analogies Test (MAT).
   b. A grade point average of 3.0 on a scale of 4.0 during the last two years of undergraduate study.
7. An essay which addresses the applicant's interest in the program, what the applicant expects to derive from the program, and the applicant's career aspirations.
8. Three letters of reference, at least two of which must be from educators.
9. An interview with the Admissions Committee of the program.

Note: The Admissions Committee will weigh the applicant's credentials in their entirety and may, where deficiencies are noted, require additional academic work. Deficiencies will not necessarily lead to a denial of admission.

ADDITIONAL ADMISSION REQUIREMENTS FOR FOREIGN APPLICANTS

1. Submission of Official Scores on the Test of English as a Foreign Language or the Michigan Test, if the applicant is from a non-English-speaking country. International students who are academically admissible *may* be granted conditional admission to a degree program prior to satisfying the English language and/or standardized entrance examinations requirements. Each department/college will specify the terms for satisfying stated conditions within a given time period and will clearly outline the terms in each student's notice of admission. Full graduate admission status will be granted when all conditions have been met.
2. A Certificate of Financial Responsibility must be filed showing the applicant's financial resources during his/her stay in the United States.
3. Under no circumstances will an I-20 Form be issued until the applicant has been admitted to a degree program.

All applicants submitting transcripts from non-U.S. educational institutions should note that some bachelor's degrees given by non-U.S. schools are not equivalent to the American bachelor's degree. Recipients of these degrees are not eligible for graduate study at The University of North Carolina at Charlotte.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO SPECIFIC GRADUATE PROGRAMS LEADING TO THE MASTER OF ARTS (M.A.) DEGREE

English

1. Thirty semester hours of undergraduate coursework in English beyond the freshman level, or evidence of equivalent academic preparation for graduate study in English, as approved by the Department of English.
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or on the Miller Analogies Test.

Geography

1. An overall grade point average of at least 2.8 (on a 4.0 scale) on the last 60 semester hours (90 quarter hours) attempted.
2. A grade point average of 3.0 in the undergraduate major, whatever it may be.
3. A satisfactory total score on the Aptitude Portion of the Graduate Record Examination or satisfactory scores on both the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.
4. An undergraduate major in geography is *not* required. In order to ensure competence in the basic concepts and methodologies of geography, however, the Department expects each incoming student to either possess or establish a proficiency with materials offered in several undergraduate courses.

   For students in the Location Analysis and the Urban-Regional Analysis and Planning concentrations, these courses are GEOG 1105 (Human Location), GEOG 2100 (Maps and Graphs) and GEOG 2110 (Research Methods).

   The relevant courses for the Environmental Analysis concentration are ESCI 1101 (Earth Science-Geography), ESCI 1102 (Earth Science-Geology), GEOG 2100 (Maps and Graphs) and GEOG 2110 (Research Methods).

   Deficiencies may be removed after admission by either taking the appropriate course or through examination.

Students may enter during any semester. All applicants for admission who satisfy general Graduate School admission requirements will be reviewed by a Departmental Graduate Advisory Committee for a final decision. Upon admission, each student will be assigned to an adviser who will work with the student in designing a program of study. All potential applicants are encouraged to visit the Department of Geography and Earth Sciences for an interview.

History

1. All applications for admission must be approved by the Graduate Committee of the Department of History.
2. Although an undergraduate major in history is not required, substantial preparation in history or related fields, i.e., political science, foreign languages, English, will weigh heavily.
3. A satisfactory score is required on the Aptitude Portion of the Graduate Record Examination.
4. The Department reserves the right to admit with specific conditions or to establish prerequisites for admission for applicants who do not clearly meet every requirement for admission.

Mathematics

1. Applicants must present evidence of the satisfactory completion of at least 27 semester hours of mathematics approved by the Departmental Graduate Committee.
2. A satisfactory score is required on the Aptitude Portion of the Graduate Record Examination.
3. It is recommended that the student have a basic knowledge of at least two of the areas of algebra, real analysis and topology.

Mathematics Education

1. Eighteen hours of approved undergraduate work in mathematics.
2. Evidence of satisfactory scope and grade point average in undergraduate courses in professional education.
3. Possession of a North Carolina Class "A" teacher's certificate or the equivalent. An applicant may be admitted on the condition that he/she satisfy the Class "A" requirements early in his/her course of study. Work applied to the Class "A" deficiency may not be applied toward the degree.
4. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or the combination of the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.

Psychology

1. A minimum of 18 hours of undergraduate psychology, including general psychology, research methods and statistics.
2. A minimum overall undergraduate grade point average of 2.8 (on a 4.0 scale) and at least a 3.0 average in all psychology courses attempted.
3. Satisfactory scores on the Aptitude and Advanced Psychology portions of the Graduate Record Examination.
4. Psychology currently accepts graduate students for fall semester enrollment only.

Sociology

1. An overall undergraduate grade point average of 3.0 (on a 4.0 scale).
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.
3. A minimum of 18 hours of undergraduate courses in social science.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO SPECIFIC PROGRAMS LEADING TO THE MASTER OF SCIENCE (M.S.) DEGREE

Architecture

1. Evidence of a general knowledge of the humanities, including social science (history, philosophy, sociology, psychology, etc.) and the arts (literature, visual and performing arts).
2. Either a first professional degree in Architecture (BArch or MArch) or, if degreed in another field, evidence of proficiency in History of Modern Art or Architecture, Two and Three Dimensional Design, Figure or Free Hand Drawing and Building Systems. Proficiency in these fields may be acquired during the program of study.

Biology

1. Evidence of undergraduate preparation in biology with a minimum of 24 semester hours in biology and 24 semester hours of cognate sciences.
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.

Chemistry

1. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.
2. Students judged by the Chemistry Department to be deficient in their training may be admitted conditionally.
3. As an aid in identifying such deficiencies, placement examinations will be given by the Department each semester just prior to registration.
4. Any deficiencies will be removed within one year by remedial study as directed by the Department.

Computer Science

1. Evidence of satisfactory undergraduate preparation, with a grade point average of at least 3.0 (on a 4.0 scale) on the last 60 semester hours attempted.
2. A minimal background in mathematics to include two semesters of calculus, one semester of linear algebra, and one semester of discrete structures.
3. A working knowledge of two high-level computer languages, at least one of which is procedural; a knowledge of an assembly language; a knowledge of computer data structures; a familiarity with computer applications. Such knowledge is usually manifested through the completion of coursework at the university level with a grade point average of at least 3.0.
4. Submission of satisfactory scores on the Aptitude Portion of the Graduate Record Examination. (The advanced test in Computer Science is not required, but may be submitted for consideration.)
5. Individuals who have worked at a high professional level in the computer industry may be able to substitute work experience for specific subject area admission requirements. Approval of such substitution is at the discretion of the Computer Science Department.
6. Students with special backgrounds who do not meet all of the above requirements may be considered for admission on a conditional basis. Any such conditions will be clearly stated and agreed to before admission is completed.

Criminal Justice

1. Each applicant must be approved by the Graduate Committee of the Department of Criminal Justice.
2. A minimum overall grade point average of 2.75 (on a 4.0 scale) on all the applicant's previous college work.
3. A percentile score of at least 35 on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.
4. An undergraduate major in criminal justice is *not* required. In order to insure competence in the basic concepts of criminal justice, however, the Department expects each incoming student to either possess or establish a proficiency with the materials offered in the three courses required for undergraduate majors:

CJUS 2100—General Criminal Justice
CJUS 3100—Criminal Justice Theory
CJUS 3101—Research Methods in Criminal Justice

The Admissions Committee shall assess the academic background of each applicant and, in those cases involving deficiencies in these areas, may indicate remedial action to be required of the student.

5. In addition to the statement of professional career growth and description of any significant work experience, the applicant may provide any written materials which he/she wishes to have considered in the admission decision.

Economics

1. Satisfactory scores on the aptitude portion and the advanced test in Economics of the Graduate Record Examination.
2. Satisfactory completion of Intermediate Microeconomic and Macroeconomic Theory, Introductory Calculus and Statistics and Mathematical Economics or its equivalent.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF BUSINESS ADMINISTRATION (M.B.A.) DEGREE PROGRAM

1. A generally satisfactory undergraduate record from an accredited college or university.
2. At least 1000 points on the formula: 200 x the upper division GPA plus the score on the Graduate Management Admissions Test (GMAT) administered by the Educational Testing Service of Princeton, New Jersey.
3. A description of any significant work experience.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF EDUCATION (M.Ed.) DEGREE PROGRAM

1. Students must present evidence of satisfactory scope and grade point average in courses in human development and/or professional education and a satisfactory scope and grade point average in courses appropriate to the cognate concentration.
2. Possession of a North Carolina Class "A" teacher's certificate or the equivalent. Applicants may be admitted on the condition that they satisfy the Class "A" requirements. Work applied to correct the Class "A" deficiency may not be applied toward the M.Ed. degree.
3. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER'S DEGREE PROGRAMS IN ENGINEERING

1. Evidence of satisfactory undergraduate preparation in engineering, usually manifested by the possession of a baccalaureate degree in some area of engineering.
2. Applicants with baccalaureate degrees from fields other than engineering (e.g., engineering physics, chemistry, mathematics, etc.) may be considered for admission to graduate study on a conditional basis. In engineering, such an applicant will be required to remove deficiencies in his or her engineering background as delineated by the department of engineering in which the applicant wishes to pursue his or her major area of study.
3. All conditional admissions are subject to the approval of the College's Engineering Graduate Committee (EGC). Also, subsequent evaluation of such students after completion of 12 hours of graduate work is subject to the approval of the EGC, as are requests for readmission.
4. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or on the combination of the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.
5. Acceptability for admission is based upon the applicant's records and background as determined by the department of the College of Engineering in which the applicant wishes to pursue his or her major area of study. The department has the prerogative to accept the applicant without reservation, to accept the applicant with conditions, or to reject the applicant. Any conditions are to be clearly stated and agreed to by the applicant before admission is completed.

ADDITIONAL REQUIREMENTS FOR ACCEPTANCE AND PROGRESSION IN THE MASTER OF SCIENCE IN NURSING (MSN) PROGRAM

1. Current licensure as a Registered Nurse.
2. Baccalaureate degree from a National League for Nursing accredited nursing program.
3. Satisfactory performance on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.

4. One year of professional nursing practice following completion of the baccalaureate degree is recommended.
5. An overall grade point average of at least 3.0 (on a 4.0 scale) on the last 60 semester hours attempted.
6. Completion of a statistics course with a grade of *C* or better.
7. Students admitted to the functional area of nurse anesthesia must have one year critical care experience with adult clients and certification in Advanced Cardio Life Support (ACLS).

For Progression into Clinical Courses

1. Current licensure to practice nursing in North Carolina or the state identified by faculty for clinical practice.
2. For students in Adult Health and Parent Child clinical concentration, the student must present college credit or documented college course content in physical assessment.

ADDITIONAL REQUIREMENT FOR ACCEPTANCE INTO THE MASTER OF PUBLIC ADMINISTRATION (MPA) DEGREE PROGRAM

1. A percentile score of at least 25 on the Aptitude Portion of the Graduate Record Examination or on the Miller Analogies Test.

Note: Acceptance into one graduate program does not guarantee acceptance into any other program. Acceptance into each program must be approved by the department or college offering the program.

Student Responsibility

Every student is responsible for the proper completion of his/her academic program, for familiarity with the *University Catalog,* for maintaining the grade average required and for meeting all other degree requirements. The adviser will counsel, but the final responsibility remains that of the student.

A student is required to have knowledge of and observe all regulations pertaining to campus life and student deportment. As students willingly accept the benefits of membership in the UNCC academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNCC community cooperation and make those benefits possible. The University has enacted two codes of student responsibility: **The UNCC Code of Student Academic Integrity** and **The UNCC Code of Student Responsibility,** and has instituted a program to prevent the use of illegal drugs and alcohol. These are outlined on pages 24-28 of this *Catalog.*

A student is also responsible for maintaining communication with The University by keeping on file with the Registrar's Office at all times a current address, including zip code, and telephone number.

Every student, while associated with The University, is expected to comport himself/herself in campus and community life in a manner that will reflect credit upon the student and The University.

Academic Regulations and Degree Requirements

General information regarding academic regulations can be found on pages 52-67 in this *Catalog.* Students should familiarize themselves with the information presented on those pages. Additional information that specifically pertains to graduate students follows below.

REGISTRATION

The registration process takes place on designated days at the opening of each semester and each summer term prior to the beginning of classes. In addition, students who are already enrolled are given the opportunity to register in advance for the subsequent term during each regular semester. Complete information on registration is presented on pages 53-55. Subjects covered include adding and dropping courses, withdrawal policies, interinstitutional registration, auditing classes and attendance.

Late Registration. Late registration takes place on designated days after the beginning of classes each term. Except under special conditions, no student will be permitted to register after the last day of late registration as announced in the calendar for each semester and summer term. A late registration fee will be charged.

Registration for Credit. No credit will be awarded to a student for a course unless he/she is properly registered for it. Graduate credit will not be awarded unless the student is properly registered in a course that has been approved for graduate credit.

Dual Undergraduate/Graduate Registration. Undergraduate students at UNCC who are required to take fewer than 12 semester hours of undergraduate work to fulfill all requirements for the bachelor's degree may be allowed during their final semester to enroll in certain courses for the purpose of obtaining graduate credit. Authorization for dual undergraduate/graduate registration may be obtained by submitting to the Dean of the Graduate School a Special Request Form approved by the student's undergraduate academic adviser, the instructor(s) of the graduate course(s), and the dean(s) of the college(s) offering the graduate course(s), accompanied by a post-baccalaureate application. The total hours to be carried in this status shall not exceed 12 hours, of which no more than nine may be for graduate credit. On the basis of work attempted prior to the final semester, such student must meet the grade point criteria for admission to a graduate degree program at The University. No course for which credit is applied to an undergraduate degree may receive graduate credit. Permission to take graduate courses under dual registration does not constitute admission to any graduate degree program at The University.

Withdrawal. Any student voluntarily leaving The University before the close of the term must withdraw officially. A student initiates the withdrawal procedure and files the completed form at the Registrar's Office. A student who is unable to appear in person may notify the Registrar's Office of withdrawal by letter. A withdrawal is effective when the form or letter is received by the Registrar's Office. A student who withdraws from The University will receive the grade of *W* for all courses in progress. In order to return to The University, an undergraduate student must apply and be accepted for readmission unless the withdrawal occurred during a summer session in which case a readmission application is not required. Graduate students who return to The University within two years are not required to apply for readmission.

Any student who leaves The University before the close of a term without withdrawing officially will receive a failing or unsatisfactory grade *(F* for undergraduate credit and *U* for graduate credit) in each course for which he/she is registered. Enrollment will be terminated for any graduate student who receives a *U* and he/she will be required to reapply for admission.

Two weeks prior to the last day of class (or as close to half of the summer term as possible) is the last date withdrawal transactions are to be processed. (Students who withdraw after that date will receive a grade of *F* or *U.)* No student will be allowed to withdraw after the deadline unless there are extenuating circumstances and the drop is approved by the student's adviser and the dean of the Graduate School.

COURSE LOAD

A course load of nine semester hours constitutes a normal full semester program for a graduate student. The graduate student's load should be lower than the normal undergraduate load to encourage extensive reading, independent thinking and appropriate individual research. Generally, graduate students should not register for more than 12 semester hours during a semester.

An appropriate course load is dependent upon two factors: the scholastic ability of the student as reflected by his/her academic history and the time available for study. Full-time professional public school employees are limited to one course each semester during the academic school year. Others whose full-time employment totals 40 hours a week should not carry more than seven semester hours.

A graduate assistant must register for a minimum of six graduate-level semester hours during each semester.

CHANGE OF DEGREE PROGRAM

A graduate student may change from one degree program to another if he/she meets the criteria for admission to the new program and is accepted by the new department. The student must file a written request for change with the Graduate Admissions Office, which will forward all credentials to the new department for an admissions decision. The student, department and Registrar will be notified of the decision by letter.

GRADING POLICIES

Complete information regarding grading policies, grades, credits, and obtaining transcripts is given on pages 55-57. Students are responsible for familiarizing themselves with the material presented on those pages. In addition, the following information pertains specifically to graduate students.

Grades. Letters are used to designate the quality of work done.

Graduate Grades

Letter	Meaning	Grade Points Per Semester Hour
A	Commendable	4
B	Satisfactory	3
C	Marginal	2
U	Unsatisfactory	0
I	Incomplete	*
IP	In Progress	*
W	Withdrawal	*
P	Pass	*
N	No Credit	*
AU	Audit	*
NR	No recognition given for audit	*

Certain graduate courses such as research seminars, tutorials, internships or theses may be designated for *Pass/No Credit* grading upon recommendation of the offering department and approval of the Graduate Council. The grade of *P* in such a course shall be considered as evidence of satisfactory performance. A grade of *N (No Credit)* will not affect eligibility for continued enrollment nor will it apply toward requirements for the degree.

Grade Point Average. The grade point average for a graduate student is based only on those courses in his/her approved program of study taken at UNCC or through the Charlotte Area Educational Consortium. It is determined by multiplying the number of grade points for each grade ($A=4$, $B=3$, $C=2$, $U=0$) by the number of semester hours credit received in that course and adding all accumulated grade points together, then dividing by the total number of semester hours the student has attempted except those for which the student received a grade of *I, IP, W, P, N, AU,* or *NR*. When a course not listed as "May be repeated for credit" is repeated, no additional credit hours attempted accrue and the hours earned and grade points of the previous grade are replaced by those of the current grade.

Repeating a Graduate Course. A graduate student will be allowed to repeat a maximum of two courses in which the student has been assigned a grade of *C, U* or *N* (but not an *I*). A given course may be repeated one time only. Whenever a course is repeated, no additional hours attempted accrue, and the new grade replaces the previous grade in computing the grade point average and in the assignment of academic credit. The record of the first attempt will remain a part of the student's permanent record and will count in the number of marginal *(C)* grades accumulated. Successfully repeating a course does not change the number of marginal *(C)* grades accumulated. Enrollment will be terminated if a student receives a grade of *U* in a repeated course.

REQUIREMENTS FOR CONTINUED ENROLLMENT

A student enrolled in any graduate program should maintain satisfactory progress toward the degree. He/she is expected to achieve a commendable or satisfactory grade *(A* or *B)* in all coursework attempted for graduate credit.

An accumulation of three marginal *(C)* grades will result in termination of the student's enrollment in the graduate program. If a student makes a grade of *U* on any course, enrollment will be terminated.

A graduate student whose enrollment has been terminated because of grades is ineligible to attend any semester or the summer session unless properly readmitted.

A student readmitted to the graduate program through the reapplication procedures will be expected to complete the degree program with satisfactory or commendable performance. Should the student receive a grade of *C* or *U* after being readmitted to the program, his/her enrollment in the graduate program will be terminated.

Continuous Registration. Students in Master's and Certificate of Advanced Study programs are required to maintain continuous registration (fall and spring semesters) for Thesis/Project/Directed Study until work is completed. Students who exceed the required number of hours without completing their work should register for "Thesis with 0 credit" until the thesis/project/directed study is completed. A department may petition the Dean of the Graduate School for a waiver of this policy for individual students on a semester-to-semester basis.

REQUIREMENTS FOR READMISSION AFTER ACADEMIC SUSPENSION OR TERMINATION

Students whose enrollment is terminated for academic reasons must apply and be readmitted in order to continue their program of study. After notification of termination is received, the student initiates the reapplication procedure by filing an application for graduate readmission and a letter explaining any extenuating circumstances with the Graduate Admissions Office. If the student was not enrolled when the notice of termination was received, the application must be accompanied by a $15 fee which is not refundable. The Graduate Admissions Office will forward the application to the student's department/college for a recommendation. Applications for non-degree students will be forwarded to the Dean of the Graduate School. The department/college will designate a Readmittance Committee to consider the student's appeal for readmission. The committee will be composed of faculty members other than the faculty member(s) who assigned the grades of *C* or *U*. The Readmission Committee shall recommend to the Dean of the Graduate School that the student either be reinstated or dropped from the program. The Readmission Committee will decide each case on its individual merits. The student will be notified of the decision in writing.

TRANSFER CREDIT

Transfer Credit from Other Institutions. Transcripts are evaluated in the Graduate Admissions Office and the results are provided to the applicant and to the department offering the graduate program. Determining the applicability of transferred credits to graduate program requirements is the responsibility of the department offering the program. General rules governing transfer credit:

1. At the time of admission up to six transfer hours credit may be accepted from another accredited institution upon approval of the student's adviser and the Dean of the Graduate School.
2. The grade in any course accepted for transfer credit must be the equivalent of that awarded for commendable *(A)* or satisfactory *(B)* work as defined by UNCC.
3. Courses accepted for transfer are subject to the same time limitation as courses taken in residence.
4. To be considered for transfer credit, the courses must have been undertaken at a *regionally* accredited institution.
5. Courses in which credit is accepted must be appropriate for approved University programs and curricula in which the student is enrolled.

Transient Study. Courses undertaken by UNCC students at other accredited institutions may be transferred to The University subject to the following regulations:

1. The University is not obligated to accept any credit from another institution unless the student has obtained the *prior approval* of the department in which he/she is enrolled and of the Dean of the Graduate School. A Graduate Transfer Credit form should be completed and filed in the Registrar's Office.
2. No credit will be accepted below *B* level.
3. The student must request that an official transcript be mailed to the Registrar's Office upon completion of the course. The Graduate Transfer Credit form for this purpose is available in the Registrar's Office.

Credit by Examination. A student currently enrolled at UNCC may pass a specially prepared challenge examination and receive credit for a University course without having to do the normal coursework. The student contacts the chairperson of the department in which credit is sought to request administration of an examination. Since it may not be appropriate to award credit by examination for some courses, the decision to offer an examination is that of the department. If the chairperson authorizes an examination, the student is instructed to pay the fee for credit by examination (see page 44) and to bring the receipt of payment to the examination. Credit by examination will be indicated on the transcript, but no grade points will be awarded. Failure on such an examination will incur no grade point penalty. A department may allow a student to take examinations for courses not offered at UNCC, if it deems it appropriate to do so. No student may challenge a course for which either a passing or failing grade has been received at UNCC.

APPLICATION FOR THE DEGREE

Each student should make application for his/her degree on a form obtained from the Registrar's Office no later than the filing date specified in the University calendar. The application must be accompanied by the appropriate filing fee in effect at the time of the application. Degrees are awarded at commencement exercises held at the end of the spring semester; however, the diploma and transcript will reflect the term in which all requirements were completed.

EARNING A SECOND DEGREE

Second Master's Degree. A student is permitted to earn a second master's degree subject to the following conditions: (1) no work applied to a previously awarded degree may be applied to the new degree program; (2) the student must gain admittance to a degree program different from that of his/her previous graduate degree(s) as determined by the HEGIS classification system; and (3) the student must successfully meet all requirements for the new degree.

The University of North Carolina classifies its degree (and certificate) programs with a modified version of the system used by the U.S. Office of Education in its Higher Education General Information Survey (HEGIS). The HEGIS system classifies all degree programs for appropriate instructional planning and identification.

APPEAL PROCEDURES

Any student or applicant may appeal any decision affecting his/her status as a graduate student by submitting a written petition to the Appeals Committee of the Graduate Council in care of the Graduate School after remedies have been exhausted in the appropriate college. The petition shall briefly describe the facts which support his/her claim and the remedy being sought. The petition must be submitted within six calendar months of notification of the action being appealed. After receiving the petition, the chairperson of the Appeals Committee will schedule a hearing as soon as possible. A hearing will be held within 60 days of receipt of the written petition of appeal. Evidence will be received from the petitioner and other parties having information bearing on the appeal. The chairperson of the Appeals Committee shall report its decision on any appeals matter (a) directly to the Dean of the Graduate School and (b) to the Graduate Council at the first board meeting following the hearing. The Dean of the Graduate School shall advise the petitioner in writing of the decision of the Appeals Committee within 30 days after the end of the hearing. Questions about the procedure should be addressed to the Dean of the Graduate School.

GRADUATE DEGREE REQUIREMENTS

Residence Requirements. It is important to note that, generally, **no more than six semester hours of transfer credit are accepted toward a graduate degree.** All other work must be residence credit.

Residence credit is credit that is earned under the conditions specified herein and may be applied toward the attainment of graduate degrees at The University of North Carolina at Charlotte. These conditions must be satisfied regardless of the location in which the course is given.

1. Instruction: The instructor must be a member of the Graduate Faculty of UNCC, or "especially qualified" for a particular course under Graduate Council policy.
2. Course(s): The content of each course must be approved by regularly established college, Graduate School and University curricular processes before the course is scheduled or offered.

Residence credit may also be awarded by virtue of an examination administered by the faculty of the department offering credit. A student may also, with the prior approval of the appropriate University of North Carolina at Charlotte department and of the Dean of the Graduate School, take graduate courses for residence and course credit at other accredited institutions.

Program Approval. Each student's individual program of study must be approved by his/her department/college.

Admission to Candidacy. Upon successful completion of a minimum of 18 semester hours of graduate work and in no case later than two weeks prior to the beginning of the semester in which he/she expects to complete all requisites for the degree, a student should file for Admission to Candidacy on a form supplied by the Registrar's Office. This application is a check sheet approved by the student's adviser, department chairperson and college dean listing all coursework to be offered for the degree (including transfer credit and courses in progress.)

Upon receipt of this application, the Dean of the Graduate School will consult with the department concerned to arrange for the scheduling of the comprehensive examination(s) and composition of the examining committee.

Minimum Hours and Quality. A student is expected to satisfactorily complete a minimum of 30 to 60 semester hours of approved courses, depending upon his/her individual program, with an overall grade average of 3.0 or better. At least half of the semester hours in the approved program must be in courses available for graduate credit only. No more than six hours evaluated as *C* may be counted toward the minimum hours required for the master's degree.

Comprehensive Examination. After admission to candidacy, each student must successfully complete a comprehensive examination. The examination may be written, oral, or both, depending upon the student's specific program requirements.

Time Limit. All work offered for the master's degree, including accepted transfer credit, must be completed within a six-year period. This period begins with the beginning date of the earliest course offered for the master's requirements and ends six years thereafter.

Thesis. The thesis must be submitted for final approval of the department or college thesis committee at least three weeks before the date of the oral examination in which the thesis is involved. The master's candidate must submit three copies of the unbound approved thesis to the Graduate School at least one week before the beginning of the final examination period for the semester or summer at the end of which the degree is to be awarded. Copies of *Guidelines for Theses for the Master's Programs* are available in the Graduate School office.

Course and Other Requirements. For a description of course and other requirements for specific degrees, consult the specific graduate program in the following pages.

Graduate Programs and Courses of Study

DIRECTORY OF GRADUATE DEGREE AND CERTIFICATE PROGRAMS

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Biology, M.A., M.S. 325
Business Administration, M.B.A. 329
Chemistry, M.S. 333
Computer Science, M.S. 335
Criminal Justice, M.S. 338
Economics, M.S. 340
Education 343
  Counselor Education, M.A. 344
  Curriculum and Instruction 348
    Elementary Education, M.Ed.
    Middle Grades Education, M.Ed.
    Secondary Education, M.Ed.
  Educational Administration, M.Ed., Ed.D. 353
  Health Education, M.Ed. 358
  Teaching Specialties 360
    Reading Education, M.Ed.
    Special Education, M.Ed.
    Teaching English as a Second Language, M.Ed.
Engineering, M.S.E. 366
  Civil Engineering, M.S.C.E.
  Electrical Engineering, M.S.E.E.
  Mechanical Engineering, M.S.M.E.
English, M.A. 380
Geography, M.A. 383
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Mathematics, M.A., M.S. 389
Mathematics Education, M.A. 389
Nursing, M.S.N. 395
Psychology (Clinical/Community), M.A. 399
Psychology (Industrial/Organizational), M.A. 400
Public Administration, M.P.A. 403
Sociology, M.A. 406

CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

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Curriculum and Instruction Specialist (Supervision) 348
Elementary (Early Childhood and Intermediate) Education 349
Educational Administration 353
Secondary Education (English, History, Mathematics) 349
Special Education 361

INTERINSTITUTIONAL MASTER'S DEGREE PROGRAM

The University of North Carolina at Charlotte participates in two interinstitutional degree programs at the master's level: the Master of Social Work (M.S.W.) degree program and the Master of Arts in Higher Education (M.A.), Adult Education track. The M.A. is awarded by Appalachian State University; the M.S.W. is conferred by the University of North Carolina at Chapel Hill.

INTERINSTITUTIONAL DOCTORAL DEGREE PROGRAMS

The University of North Carolina at Charlotte participates in two interinstitutional degree programs at the doctoral level: Doctor of Education (Ed.D.) in educational administration and Doctor of Philosophy (Ph.D.) in engineering. The Ed.D. is awarded by the University of North Carolina at Chapel Hill; the Ph.D. is conferred by North Carolina State University.

GRADUATE PROGRAMS

The following section presents the graduate programs of The University of North Carolina at Charlotte in alphabetical order by subject area, including information regarding degree requirements and course descriptions. Sections outlining The Microelectronics Program and the Interdisciplinary Operations Research Program follow the individual graduate programs. "Other Courses Carrying Graduate Credit" (pages 413-415) lists courses that are not listed in specific graduate degree programs.

COURSES OF STUDY

Following the description of each degree program are course descriptions. Complete information on course descriptions and the course numbering system appears on pages 68-69 of this *Catalog*.

Course Numbering. Up to six hours in **3000**-level courses taken as part of a teacher certification program at UNCC may, by filing a Special Request, be approved for graduate credit. The Special Request must bear the signatures of the chairperson of the department offering the course and the coordinator of the student's certification program. Such approval must be obtained prior to the end of the "add period" of the semester in which the course is taken. *This policy applies only to teacher certification programs.*

Courses numbered **4000-4999** carry graduate credit, although they are primarily designed for advanced undergraduates. Additional work is required by graduate students taking 4000-level courses. Such courses may be listed by course number and title only. Complete course descriptions are presented in the undergraduate section of the *Catalog* according to department.

Courses numbered **5000-5999** are primarily designed for graduate students, although advanced undergraduates may take them for undergraduate credit.

Courses numbered **6000-7999** are for graduate students only.

Courses numbered **8000-8999** are for doctoral students only.

The second digit in the course number designates special types of courses: 0 for topics, 4 for internships and practica, 5 for cooperative education, 6 for seminars, 7 for honors courses, 8 for independent study and 9 for research.

Architecture

Degree: M.S.A. *Coordinator:* Eric J. Sauda

MASTER OF SCIENCE IN ARCHITECTURE

The Master of Science in Architecture degree program provides an opportunity for the study of the cultural setting of architecture using the methodologies of analysis and design. The program includes concentrations in theory of design and theory of technology which share a sequence of

core courses and parallel design studios and seminars. Designed primarily as a research degree for students who already have professional degrees in architecture and for students interested in research who have no intention of seeking a professional degree, the program is intended for full-time students who will work in collaboration and complete their studies during a period of approximately 14 months.

Degree Requirements. The curriculum comprises 44 credit hours to be completed during one academic year and the preceding and succeeding summer sessions. Students must complete a thesis project approved by the COA Graduate Committee. Full-time residency is required during study in the program.

Curriculum

First Summer Session
ARCH 6101 Studio/Research

Fall Semester
ARCH 6102 Design/Research Studio
ARCH 6121 Architecture and Cultural Context I
ARCH 6611 Theory of Design Seminar *or*
ARCH 6641 Theory of Technology Seminar I
Directed Elective

Spring Semester
ARCH 6103 Design/Research Studio
ARCH 6122 Architecture and Cultural Context II
ARCH 6612 Theory of Design Seminar II *or*
ARCH 6642 Theory of Technology Seminar II
Directed Elective

Second Summer Session
ARCH 6104 Studio/Research

Each year, the College will issue a Statement of Theme for the graduate program. This theme will be centered on an important issue of architectural theory and will serve as the vehicle for collaboration by the students and faculty in their research. Much of the coursework is specifically addressed to the theme for the particular year.

Transfer Credit. Because of the nature of the program, transfer credit will not normally be allowed. However, an exception may be made for graduate students who wish to pursue a specific academic offering at another institution as part of their research. The graduate committee can, in such a case, recommend the acceptance of tansfer credit.

ARCHITECTURE (ARCH) COURSE DESCRIPTIONS

ARCH 6101. Studio/Research. (7G) Introduction to the methods of architectural research and to the theme topic for the year. Course worksite chosen to offer the greatest possibilities to study architectural examples relevant to the topic. *(Summer)*

ARCH 6102. Design/Research Studio. (5G) Prerequisite: ARCH 6101. A coordinated set of intensive individual research projects on the theme topic. Course content determined by theme for the year. *(Fall)*

ARCH 6103. Design/Research Studio. (5G) Prerequisite: ARCH 6102. Focus on individual topics of research and design that are related to the general topic. Course content determined by theme for the year. *(Spring)*

ARCH 6104. Design Studio. (7G) Prerequisite: ARCH 6103. An intensive design charrette which represents the culmination of the work done by the students and professors for the first year on the selected topic. *(Summer)*

ARCH 6121. Architecture and Cultural Context I. (4G) Prerequisite: ARCH 6101. Examination of paradigms of human activity, such as the means and methods of production and its influence on the products of culture; structuralism as a method of understanding philosophical and cultural phenomenon; literary and artistic criticism as a way of understanding cultural objects; and modernism and the history of technology as dual expressions of the industrial revolution. *(Fall)*

ARCH 6122. Architecture and Cultural Context II. (4G) Prerequisite: ARCH 6102. Continuation of ARCH 6121. *(Spring)*

ARCH 6611. Theory of Design Seminar I. (3G) Prerequisite: ARCH 6101. Study of architectural theory from Vitruvius to the present. Special emphasis will be placed on reading primary sources. *(Fall)*

ARCH 6612. Theory of Design Seminar II. (3G) Prerequisite: ARCH 6102. Continuation of ARCH 6611. Intensive investigation of specific theoretical positions. *(Spring)*

ARCH 6641. Theory of Technology Seminar I. (3G) Prerequisite: ARCH 6101. Survey of the uses and understandings of machines and images of machines since the beginning of the industrial revolution. *(Fall)*

ARCH 6642. Theory of Technology Seminar II. (3G) Prerequisite: Successful completion of ARCH 6102. Continuation of ARCH 6641. Intensive investigation of specific theoretical positions. *(Spring)*

Biology

Degrees: M.S., M.A. *Coordinator:* James C. Travis

MASTER OF SCIENCE DEGREE IN BIOLOGY

Graduates of the Master of Science degree program in biology are expected to have breadth of knowledge in the major biological areas and depth of knowledge and technical experience in a selected field of specialization. The program provides broad training in such areas as development, ecology, cell and molecular biology, morphology, behavior, physiology, microbiology and genetics, and encourages specialization through thesis research and participation in specialty courses. Students may include in their program courses in related areas such as biochemistry. Specialization may provide a basis for more advanced studies or enable the student to choose teaching, technical or health-related areas of a vocation.

Degree Requirements. The Master of Science program requires successful completion of at least 32 semester hours of coursework approved by a supervisory committee. At least 16 of these hours, including two hours of seminar and no more than eight hours of thesis research, must be in courses open to graduate students only.

In addition to coursework, each candidate for a degree must pass an oral candidacy examination and a final oral examination. The candidate must prepare and present a thesis acceptable to the supervisory committee and the Dean of the Graduate School at least three weeks before the date of the final oral examination.

Admission to Candidacy. General academic regulations will apply to application for admission to candidacy. In addition to these the applicant should have:

1. Removed any identified entrance deficiencies by the time of application.
2. Successfully completed the candidacy examination.
3. Taken at least 15 hours of graduate work with at least a *B* average.
4. Satisfied the supervisory committee that he/she is qualified to become a candidate, i.e., can fulfill the requirements successfully.

MASTER OF ARTS DEGREE IN BIOLOGY

The Master of Arts degree in biology is designed for students seeking a graduate degree in biology and choosing to write a thesis based on published scientific literature rather than on laboratory or field research.

Degree Requirements. Admission to the graduate program and degree requirements are identical to those of the Master of Science in biology, with the exception that a maximum of four hours of credit for thesis research may be included in the required 32 hours, and three courses of the 32 hours submitted for the degree must include a formal laboratory.

BIOLOGY (BIOL) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. See pages 88-90 for complete course descriptions.

BIOL 4000. Special Topics in Biology. (1-4) (1-4G)

BIOL 4111. Evolution. (3) (3G)

BIOL 4133. Parasitology. (4) (4G)

BIOL 4139. Epidemiology. (3) (3G)

BIOL 4144. Ecology. (W) (3) (3G)

BIOL 4144L. Ecology Laboratory. (1) (1G)

BIOL 4149. Limnology and Oceanography. (4) (4G)

BIOL 4161. Human Genetics. (3) (3G)

BIOL 4166. Genetics. (3) (3G)

BIOL 4166L. Genetics Laboratory. (1) (1G)

BIOL 4169. Cytogenetics. (4) (4G)

BIOL 4171. Cell Physiology. (3) (3G)

BIOL 4191. Immunology. (3) (3G)

BIOL 4191L. Immunology Laboratory. (1) (1G)

BIOL 4199. Molecular Biology. (3) (3G)

BIOL 4205. Advanced Horticulture. (3) (3G)

BIOL 4221. Plant Systematics. (4) (4G)

BIOL 4223. Cryptogamic Botany. (4) (4G)

BIOL 4229. Dendrology. (4) (4G)

BIOL 4231. Invertebrate Zoology. (4) (4G)

BIOL 4233. Vertebrate Zoology. (4) (4G)

BIOL 4243. Animal Behavior. (3) (3G)

BIOL 4243L. Animal Behavior Laboratory. (1) (1G)

BIOL 4255. Microbiology. (3) (3G)

BIOL 4255L. Microbiology Laboratory. (1) (1G)

BIOL 4272. Plant Physiology. (3) (3G)

BIOL 4272L. Plant Physiology Laboratory. (1) (1G)

BIOL 4273. Animal Physiology. (3) (3G)

BIOL 4273L. Animal Physiology Laboratory. (1) (1G)

BIOL 4274. Comparative Invertebrate Physiology. (3) (3G)

BIOL 4274L. Comparative Invertebrate Physiology Laboratory. (3) (3G)

BIOL 4282. Developmental Plant Anatomy. (3) (3G)

BIOL 4282L. Developmental Plant Anatomy Laboratory. (1) (1G)

BIOL 4283. Animal Development. (3) (3G)

BIOL 4283L. Animal Development Laboratory. (1) (1G)

BIOL 4291. Histology. (4) (4G)

BIOL 4293. Comparative Vertebrate Anatomy. (4) (4G)

Courses for Graduate Students and Advanced Undergraduates

BIOL 5000. Advanced Topics in Biology. (1-4) (1-4G) Prerequisite: a minimum of two area requirements in biology or consent of Department. Courses in selected topics and advanced studies in biology. Lecture and laboratory hours will vary with the topics taught. May be repeated for credit as topics vary. *(Fall, Spring)*

BIOL 5111. Methods in Biological Electron Microscopy. (3) (3G) Prerequisites: BIOL 4171 or 4291, two area requirements and consent of Department. A laboratory-oriented cour se in the methodology and applications of transmission and scanning electron microscopy. Two laboratory periods of three hours each a week and three additional laboratory hours. *(Fall)*

BIOL 5144. Advanced Ecology. (W) (4) (4G) Prerequisite: BIOL 4144. Energy flow, nutrient cycles, community structure, population growth and regulation. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

BIOL 5184. Plant Biotechnology. (3) (3G) Prerequisite: BIOL 3111, 4166 and CHEM 2132 or consent of Department. A laboratory-oriented course designed to integrate plant molecular biology, recombinant DNA technology, and plant cell and tissue culture. One lecture hour and two laboratory periods of three hours a week. *(Alternate Years) (Spring)*

BIOL 5189. Mechanisms in Development. (3) (3G) Prerequisite: BIOL 4283 or permission of the department. Cellular and molecular bases of differentiation; an exploration of the experimental analysis of causal and controlling factors in development. Three lecture and discussion hours a week. *(Spring)*

BIOL 5192. Monoclonal Antibiodies/Production and Purification. (3) (3G) Prerequisites or corequisites: BIOL 4191, CHEM 3175, 3175L or consent of the Department. A laboratory-oriented course devoted to the theory and procedures for the production and utilization of monoclonal antibodies and the associated techniques for protein isolation and characterization. One lecture hour and two laboratory periods of three hours a week. *(Fall)*

BIOL 5199. Aspects of Marine Biology. (1) (1G) Corequisite: BIOL 5199L. Lectures and field trips providing an introduction to marine biology. Additional work required by graduate students. *(On demand)*

BIOL 5199L. Aspects of Marine Biology Laboratory. (2) (2G) Prerequisite or corequisite: BIOL 5199 and consent of Department. A laboratory and field-intensive study emphasizing individualized investigations in a specialized area of marine biology. Additional work required by graduate students. May be repeated for credit. *(On demand)*

BIOL 5221. Biometry. (4G) Prerequisite: one course in statistics. Design and analysis of experiments. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 5231. Ornithology. (4) (4G) Prerequisite: BIOL 4233 or 4293. Taxonomy, anatomy, physiology and life histories of the birds. Three lecture hours and one laboratory period of three hours a week. *(On demand)*

BIOL 5233. Mammalogy. (4) (4G) Prerequisite: BIOL 4233 or 4293. Taxonomy, anatomy, physiology and life histories of the mammals. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

BIOL 5234. Wildlife Biology. (3) (3G) Prerequisite: BIOL 4144. Concepts, principles and techniques of wildlife biology. Identification and life histories with emphasis on the value, study attraction, management, conservation and control of wildlife species. Three lecture hours a week. *(On demand)*

BIOL 5234L. Wildlife Biology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 5234. One laboratory period of three hours a week plus field trips. *(On demand)*

BIOL 5237. Animal Communication. (4) (4G) Prerequisite: BIOL 4343 or PSYC 3110. Behavioral and structural analysis of sensory mechanisms involved in the transfer of information between individuals. Communicative strategies, analytical techniques, and sound identification of selected species. Three lecture hours and one laboratory period of three hours a week. *(On demand)*

BIOL 5251. Pathogenic Bacteriology. (3) (3G) Prerequisite: BIOL 4255. Cellular and molecular interactions of mammalian hosts with procaryotic parasites. Three lecture hours a week. *(Spring)*

BIOL 5251L. Pathogenic Bacteriology Laboratory. (1) (1G) Prerequisite: BIOL 4255L. Prerequisite or corequisite: BIOL 5251. One laboratory period of three hours a week. *(Spring)*

BIOL 5254. Marine Microbiology. (4) (4G) Prerequisites: BIOL 4255 and 4255L. Bacteria, fungi and viruses of marine origin, and their response to the salt, temperature, pressure and nutrient environment of the ocean. Roles of marine microorganisms in public health, pollution and fouling. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

BIOL 5255. Advanced Microbiology. (4) (4G) Prerequisites: BIOL 4255 and 4255L. A laboratory-oriented course covering such topics in general microbiology as the preparation and use of cell-free systems, isolation of auxotrophs, transport mechanisms, etc. Lectures in microbial metabolism and physiology and reading on recent development in microbiology. Two, one-hour lectures and two, two-hour laboratory periods per week. *(Spring)*

BIOL 5259. Virology. (3) (3G) Prerequisites: BIOL 4255, 4255L and CHEM 2132. Morphology, classification, genetics and pathogenicity of bacterial and animal viruses. Three lecture hours a week. *(Fall)*

BIOL 5259L. Virology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 5252. One laboratory period of three hours per week. *(Fall)*

BIOL 5277. Endocrinology. (3) (3G) Prerequisites: BIOL 4273. Endocrine glands and their physiological roles in metabolism, growth and reproduction. Three lecture hours a week. *(On demand)*

BIOL 5277L. Endocrinology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 5277. One laboratory period of three hours a week. *(On demand)*

BIOL 5279. Neurobiology. (3) (3G) Prerequisite: BIOL 4273. Physiology and anatomy of nervous systems, especially mammalian. Three lecture hours a week. *(Spring)*

BIOL 5279L. Neurobiology Laboratory. (1) (1G) Prerequisite or corequisite: BIOL 5279. One laboratory period of three hours a week. *(Spring)*

BIOL 5291. Advances in Immunology. (3) (3G) Prerequisite: BIOL 4191, or consent of Department. Current topics in immunology with particular emphasis upon the genetic systems and molecular mechanisms underlying immune reactions. Additional work required by graduate students. Three lecture/discussion hours a week. *(Fall)*

Courses for Graduate Students Only

The following courses are designed to allow the student to obtain an in-depth exposure to certain areas in biology. The tutorial courses will provide a foundation for the student's research endeavor; they may be tailored to supplement the student's research endeavor or tailored to supplement the student's specialization area.

BIOL 6000. Special Topics in Biology. (1-4G) May be repeated for credit. Prerequisite: consent of Department. Courses in selected topics and advanced studies in biology. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6010. Special Topics in Microbiology. (1-4G) Prerequisite: consent of Department. Advanced courses in microbiology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6020. Special Topics in Systematic Biology. (1-4G) Prerequisite: consent of Department. Advanced courses in systematic and evolutionary biology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6030. Special Topics in Genetics. (1-4G) Prerequisite: consent of Department. Advanced courses in genetics. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6040. Special Topics in Molecular Biology. (1-4G) Prerequisite: consent of Department. Advanced courses in biochemistry and molecular biology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6050. Special Topics in Physiology. (1-4G) Prerequisite: consent of Department. Advanced courses in physiology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6060. Special Topics in Developmental Biology. (1-4G) Prerequisite: consent of Department. Advanced courses in developmental biology and embryology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6070. Special Topics in Anatomy. (1-4G) Prerequisite: consent of Department. Advanced courses in anatomy and morphology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6080. Special Topics in Behavior. (1-4G) Prerequisite: consent of Department. Advanced courses in behavior. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6090. Special Topics in Ecology. (1-4G) Prerequisite: consent of Department. Advanced courses in ecology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught. *(On demand)*

BIOL 6600. Seminar. (1-2G) Two hours are required. Topics of current emphasis in biology. May be repeated for credit. *(Fall, Spring)*

BIOL 6800. Tutorial. (1-4G) Directed study in areas of specialization in biology and related fields. May be repeated for credit. Maximum credit toward degree: four hours. *(Fall, Spring)*

BIOL 6900. Research and Thesis. (1-8G) May be repeated for credit. *(Fall, Spring)*

Business Administration

Degree: M.B.A. *Coordinator:* Virginia Geurin

MASTER OF BUSINESS ADMINISTRATION

The primary objective of graduate study in business is to develop candidates for leadership positions in complex organizations of the future. The basic philosophy of the graduate program recognizes that managerial procedures and practices of today are subject to rapid change. For this reason, the program emphasizes a process of perceiving, analyzing, and solving administrative problems. The burden is placed on the student to determine relevant facts, evaluate alternatives and prepare for action. Organizations are analyzed as behavioral, financial and technological units operating in an environment with changing regional, national and international dimensions. Candidates are encouraged to anticipate, innovate and adjust to this dynamic environment.

The curriculum stresses the universal characteristics of management and their application in various types of organizations. Fundamental problems are examined from an economic and behavioral point of view.

Courses in economic analysis, managerial accounting and quantitative analysis focus on financial performance and resource allocation, while those in organizational behavior emphasize individual and group conduct. These areas along with courses in the functional areas of business, marketing, production, finance, and legal environment constitute the core courses in basic analysis required of all candidates.

After completing the basic analysis sequence, a student selects two additional courses from among the graduate courses offered by the College of Business Administration. This provides an opportunity for students to choose courses of particular interest to them.

The final courses in the program deal with management policy and strategic planning. These courses are designed to integrate the knowledge and skills of analysis developed in the preceding courses and to assure that the student can demonstrate application in a comprehensive manner through a study of cases, current information on company and industry applications, and a major written project.

The methods of instruction adopted in the program are designed to prepare a candidate for the realities of a management career. These methods include simulations, role playing, computer modeling of business applications, lectures, and the case study method. It is the ability to analyze, to judge trends, and to weigh diverse influences that leads to sound judgment. This capability can be developed only through practice. The methods of instruction employed in the program are designed to provide such practice.

Courses in the program are scheduled to accommodate part-time students. Classes are held in the evening throughout the year. Part-time students may enroll in two courses during the fall and spring semesters. A part-time student may complete the program in three years. Full-time students may complete the program in two years, depending upon scheduling of courses.

Degree Requirements. The program requires a minimum of 42 semester hours of graduate credit in approved courses.

A. Preparation

Candidates for the Master of Business Administration degree must present evidence of preparation in accounting, calculus, statistics, economics, and management information systems before beginning graduate coursework. Prerequisites will be determined at admission.

B. Basic Analysis

All candidates are required to take the following basic core courses (30 hours):

MBAD 6100	Business Research and Management Decision Making
MBAD 6111	Macroeconomics and Business Forecasting
MBAD 6112	Managerial Economics
MBAD 6122	Quantitative Analysis of Business
MBAD 6131	Managerial Accounting
MBAD 6141	Production and Operations Management
MBAD 6152	Financial Management
MBAD 6161	Organizational Behavior I
MBAD 6171	Marketing Management
MBAD 6181	Legal Environment

C. Elective Courses

After completing the basic analysis sequence, candidates must select two additional courses (six hours) from among the following courses:

MBAD 6121	Management Information Systems
MBAD 6133	Business Tax Strategies
MBAD 6151	Financial Institutions and Markets
MBAD 6153	Investment Management
MBAD 6154	Current Topics in Financial Management
MBAD 6162	Organizational Behavior II
MBAD 6163	Human Resource Management
MBAD 6172	Marketing Research
MBAD 6173	Promotional Strategy
MBAD 6174	International Marketing
MBAD 6175	Logistics Management
MBAD 6191	Entrepreneurship
MBAD 6192	Business and Society
MBAD 6193	International Business Management
MBAD 6890	Directed Individual Study

D. Capstone Courses

The final courses required for all candidates are:

MBAD 6194	Management Policy
MBAD 6196	Strategic Planning

Minor in Operations Research. The program leading to the Master of Business Administration degree also participates in the program leading to an interdisciplinary graduate minor in Operations Research. See page 412 for complete information and program requirements.

MASTER OF BUSINESS ADMINISTRATION (MBAD) COURSE DESCRIPTIONS

MBAD 6100. Business Research and Management Decision Making. (3G) Prerequisites: Admission to the MBA program. A study of business research methods, information sources, and introduction to management decision making. *(Fall, Spring)*

MBAD 6111. Macroeconomics and Business Forecasting. (3G) Managerial decision making within the macroeconomic environment. Topics include managerial applications of dynamic economic forecasts at the national, regional, and industry level; the role of the monetary and financial sectors of the economy on firm planning; and the impact and opportunities of the expanding international economy on regional and national firms. *(Fall, Spring)*

MBAD 6112. Managerial Economics. (3G) Prerequisite: MBAD 6100. Examines the pricing system within the various market structures of the economy. Incorporates optimization procedures to facilitate the study of decision making under various market conditions facing the firm. The problems of economic concentration, resource allocation, and governmental roles in a market are studied. *(Fall, Spring)*

MBAD 6121. Management Information Systems. (3G) Planning, design, implementation, and control of management information systems. Emphasis on the emerging utilization of more advanced information systems, the role of information management process and the networks necessary for efficient transmittal of information to the proper sources, and the generation and analysis of data for decision making. *(On demand)*

MBAD 6122. Quantitative Analysis of Business. (3G) Prerequisite: MBAD 6100. An analytical approach to the management process. Generalized models for decision making with major emphasis on application of the scientific method to management problems. *(Fall, Spring)*

MBAD 6123. Applied Management Science. (3G Prerequisite: MBAD 6122. Mathematical model building aimed at integrating methods and applications. Overview of mathematical programming in practice and a series of projects implementing models in business and the public sector. *(On demand)*

MBAD 6131. Managerial Accounting. (3G) Management's use of accounting. Topics include profit planning and control, evaluation of performance, cost analysis, and income tax planning. *(Fall, Spring)*

MBAD 6133. Business Tax Strategies. (3G) Prerequisites: ACCT 2121 and 2122, or ACCT 2123. Tax planning concepts and strategies for businesses including an overview of the Federal tax system, sources of tax law, guidelines for organizing and financing a business, tax incentives for capital investment, and other tax planning topics. Participants learn how to avoid some common tax traps and apply the concepts and strategies in realistic business cases. *(On demand)*

MBAD 6141. Production and Operations Management. (3G) Use of the economic, behavioral, and quantitative disciplines to develop the ability to manage in or around the operating systems of organizations — both manufacturing and non-manufacturing. Knowledge of the best systems and an approach to problem solving are developed and applied through cases to decisions which maintain the productivity of systems yielding products or services. Included are work methods, processes, and inventory, materials, and capacity management. *(Fall, Spring)*

MBAD 6151. Financial Institutions and Markets. (3G) Major financial institutions, particularly commercial banks, and their role in the intermediation process and as suppliers of funds to the money and capital markets. Comparative financial policies of these institutions are examined in the context of their legal and market environment. *(Yearly)*

MBAD 6152. Financial Management. (3G) Prerequisite: MBAD 6131. Theory and practice of corporate finance including asset management, cost of capital and capital budgeting, optimization problems and socio-economic aspects of financial management. Computer technology may be employed when applicable. *(Fall, Spring)*

MBAD 6153. Investment Management. (3G) Prerequisite: MBAD 6152. Theory and practice of investment decisions of individuals and fund managers. Topics include the status of capital market theory, the efficient market hypothesis literature, and a portfolio performance measurement. Standard institutional and investment analysis topics are covered, as well as futures and options markets and international investment topics. *(Yearly)*

MBAD 6154. Current Topics in Financial Management. (3G) Prerequisite: MBAD 6152. Examination of business finance topics currently being discussed in the business media and development of advanced analytical skills in those topic areas. Topics will change depending upon the business environment. The following topics form the basis of the course: lease vs. buy (borrow); leveraged buy-outs; merger analysis; international operations of American firms (capital budgeting); and capital structure decisions. *(Alternate years)*

MBAD 6161. Organizational Behavior I. (3G) Management and organization theory and analysis of the behavior of people in organizations. Problems in motivation, leadership, interpersonal communication, group dynamics and organization structure are introduced. *(Fall, Spring)*

MBAD 6162. Organizational Behavior II. (3G) Prerequisite: MBAD 6161. Continuation of Organizational Behavior I. Topics include performance determinants and appraisal, design of complex organizations, team building, organizational change, career development and conflict management. *(Yearly)*

MBAD 6163. Human Resource Management. (3G) Prerequisite: MBAD 6161. An examination of the current critical issues and strategic questions associated with managing employees. Case material, readings and audiovisual material will be used to stimulate discussion of the most important and strategic questions to be tackled by general managers today and in the future in the relationship between management and workers. *(Yearly)*

MBAD 6171. Marketing Management. (3G) A managerial approach to strategic marketing decision making. Topics include promotional strategy, channels of distribution, demand analysis and pricing, and international marketing. Case studies, readings and simulations are used. *(Fall, Spring)*

MBAD 6172. Marketing Research. (3G) Prerequisite: MBAD 6171. Planning, execution and evaluation of marketing research activities. Emphasis on the techniques and methodology used in the collection, analysis and interpretation of economic, demographic and sociological data for use in marketing decision making. *(On demand)*

MBAD 6173. Promotional Strategy. (3G) Prerequisite: MBAD 6171. Opportunities and challenges for an organization through advertising, personal selling, sales promotion and publicity. It includes analysis of the legal and ethical problems involved in this area. Case studies and a project assignment are used. *(On demand)*

MBAD 6174. International Marketing. (3G) Prererequisite: MBAD 6171 or consent of instructor. Study of opportunities, problems and techniques involved in marketing internationally. Analysis of environmental forces which affect international mar keting and the methods companies utilize to market effectively on an international scale. *(Yearly)*

MBAD 6175. Logistics Management. (3G) Prerequisite: MBAD 6171 or permission of the instructor. Study of the logistics system as a source of profitability and competitive advantage. Component activities (customer service, inventory, storage, transportation) are examined individually and as parts of a larger whole, with emphasis on effective management of the overall system of finished goods distribution. Special attention is given to managing the transportation function in a deregulated environment. *(On demand)*

MBAD 6181. Legal Environment. (3G) An intensive study of the common and statutory law which is applicable in a business decision-making context. Emphasis placed upon federal regulatory law and the role and functioning of the federal regulatory agencies in supervising the scope of permissible business activities. *(Fall, Spring)*

MBAD 6191. Entrepreneurship. (3G) Prerequisites: MBAD 6131, 6152, 6171, or permission of the MBA coordinator and the instructor. An examination of entrepreneurship and entrepreneurs. Focus on planning the start-up of a fast-growth enterprise with the aim of rewarding the founders and initial investors with significant capital gains. Extensive use of case studies will provide a background of classroom activities to assist students in the preparation of a detailed plan for the hypothetical start-up of a fast-growth firm. *(Alternate years)*

MBAD 6192. Business and Society. (3G) Ethical, moral, political and social aspects of policy formulation and implementation. Management's responsibilities to consumers, employees, investor/owners, and society are stressed. Case studies are used. *(Yearly)*

MBAD 6193. International Business Management. (3G) Prerequisites: MBAD 6152, 6171, and 6181, or permission of the MBA Program Coordinator. An overview of international business management. Specifically, the functional areas of business are covered to provide an international perspective. *(On demand)*

MBAD 6194. Management Policy. (3G) Prerequisite: MBAD 6152, 6171 or permission of MBA coordinator. Examination of the need to integrate the functional activities of the firm in planning corporate objectives and achieving operating results. Emphasis on ability to identify issues and problems of the firm as a whole, to explore alternatives and to make decisions which recognize the interrelationships of the functional specialties within the total organization. Application and integration of knowledge and skills of analysis developed in the preceding courses of the MBA program. *(Fall, Spring)*

MBAD 6195. Strategic Management of Technology. (3G) Prerequisites: MBAD 6141, 6152, and 6171. Impact of changing technology upon industries and companies and the consequent challenges for business managers. Major topics include: the historical context of change and innovation; organization and innovation; technology and business strategy; impact on functional areas; managing linkages; venturing and organization learning; government influence on innovation; executive leadership; the management of innovation and change. A comprehensive written report covering a significant aspect of emerging technology is required. *(Spring)*

MBAD 6196. Strategic Planning. (3G) Prerequisite: MBAD 6194. Emphasis on functioning of the firm or organization as a whole within a rapidly changing environment including changing industry conditions, as well as technological, social, political and economic changes. Plans, strategies and implementation policies must be developed if the firm is to continue. Strategic planning techniques being developed by researchers and by corporate practitioners are studied. A major objective of the course is to assure that the student completing the professional MBA program can demonstrate application in a comprehensive manner. This is done through a study of cases, current information on company and industry applications, and through a major written project. *(Fall, Spring)*

MBAD 6500. Cooperative Education Experience. (0G) Prerequisite: Completion of nine hours of graduate coursework. Participation in the Co-op Program enables MBA students to pursue practical work experience that is complementary to their major course of studies. Each student's program must be approved by the coordinator of the MBA program. *(Fall, Spring)*

MBAD 6890. Directed Individual Study. (3-3G) Directed individual study and in-depth analysis of a special area of management, economics, business or accounting. The course may be used to satisfy up to six semester hours of graduate credit requirements in the Master of Business Administration degree program and may be repeated for credit provided a different area of study is undertaken each time. Permission of a member of the graduate faculty who would direct the study and permission of the MBA program coordinator must be secured before registering for the course. *(Fall, Spring)*

Chemistry

Degree: M.S. *Coordinator:* Paul Rillema

MASTER OF SCIENCE DEGREE IN CHEMISTRY

The program leading to the Master of Science degree in chemistry is a research-based program, requiring courses of a broad, general nature. Major emphasis is placed upon the research project and required thesis.

Degree Requirements. The candidate for the degree must present a minimum of 30 semester hours of which at least 15 semester hours must be 6000-level courses open to graduate students only. The remaining credit may be earned by taking courses approved for graduate credit. Required courses include CHEM 4111, 4121, 4133 and either 4134 or 4135, 6682 and 6900. Two semester hours of graduate seminar, CHEM 6282, and at least one, but up to 16 semester hours of research and thesis credit, CHEM 6900, must be presented. In addition, six semester hours from the course group CHEM 6115, 6125, 6135, 6145, 6146 or 6060 are required. Departmental approval is necessary before CHEM 6060 credit can be used to satisfy this requirement. Any 4000 level or higher mathematics or physics course except those designed for a professional education sequence may be taken for graduate credit. Well-prepared students, particularly those with degrees from ACS-approved programs will normally satisfy the requirement for CHEM 4111, 4121, and 4133, 4134, 4135 through placement examinations administered after admission. In those cases, hours that would have been earned for these courses may be replaced by research, CHEM 6900, or by elective courses. A grade point average of 3.0 ($A = 4.0$) is required for the degree. In addition, the thesis must be accepted within six calendar years after admission into the M.S. program as a degree student. This includes a successful defense of the written thesis before a special thesis committee which shall consist of no fewer than four persons, at least one of whom must be from a department other than Chemistry.

Approval of the program of each student and monitoring his/her progress toward the degree shall be the responsibility of the student's research adviser. Prior to the selection of a research adviser, graduate student progress is monitored by the departmental Graduate Committee.

Continued Enrollment. A student in the chemistry M.S. program is required to maintain satisfactory progress toward the degree. Continued enrollment is at all times subject to review on the basis of academic record. This review is performed by the departmental Graduate Committee.

CHEMISTRY (CHEM) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. See pages 94-98 for complete course descriptions.

CHEM 3175. Introductory Biochemistry. (3) (3G) (Not available for graduate credit to students in the Chemistry Department.)

CHEM 3175L. Introductory Biochemistry Laboratory. (1) (1G) (Not available for graduate credit to students in the Chemistry Department.)

CHEM 4111. Instrumental Analysis. (4) (4G)

CHEM 4112. Applied Microcomputer Interfacing in Chemistry. (4) (4G)

CHEM 4121. Advanced Inorganic Chemistry. (4) (4G)

CHEM 4133. Methods of Organic Structure Determination. (2) (2G)

CHEM 4134. Organic Reaction Mechanisms. (2) (2G)

CHEM 4135. Concepts and Techniques in Graphic Synthesis. (2) (2G)

CHEM 4145. Advanced Physical Chemistry. (3) (3G)

CHEM 4171. Biochemical Instrumentation. (4) (4G)

CHEM 4175. Physical Biochemistry. (3) (3G)

CHEM 4695. Chemistry Seminar. (1) (1G)

CHEM 4900. Directed Undergraduate Research. (1-4) (1-4G)

Courses for Graduate Students and Advanced Undergraduates

CHEM 5090. Special Topics in Chemistry. (1-4) (1-4G) Prerequisite: consent of the Department. Selected topics in chemistry. Lecture and/or laboratory hours will vary with the nature of the course taught. May be repeated for credit.

Courses for Graduate Students Only

CHEM 6060. Special Topics and Investigations. (Variable credit, up to 3G) Prerequisite: consent of Department. Directed study of topics of current chemical interest. May be repeated for credit. *(On demand)*

CHEM 6115. Advanced Analytical Chemistry. (3G) Prerequisite: CHEM 4111 with a grade of *C* or better. The application of modern analytical methods to chemical problems. Emphasis is upon the chemical information, particularly structural, obtainable from these techniques. Three lecture hours per week. *(On demand)*

CHEM 6125. Theoretical Inorganic Chemistry. (3G) Prerequisite: CHEM 4121 with a grade of *C* or better. Group theoretical treatment of current theories of inorganic chemistry. Topics covered: Ligand field theory, molecular orbital theory for complex ions, electronic spectra of complex ions and the magnetic properties of complex ions. Three lecture hours per week. *(On demand)*

CHEM 6135. Advanced Organic Chemistry. (3G) Prerequisite: CHEM 4133 and either 4134 or 4135 with a grade of *C* or better. A qualitative discussion of modern mechanistic interpretation of the relations between structure and reactivity. Special emphasis is placed on the role of reactive intermediates such as carbonium ions, carbanions, carbenes and radicals. Three lecture hours per week. *(On demand)*

CHEM 6145. Chemical Thermodynamics. (3G) Prerequisite: CHEM 3142 with a grade of *C* or better. The postulatory basis of classical thermodynamics. Problems in chemical thermodynamics. The use of statistical mechanics for calculating thermodynamic functions. Three lecture hours per week. *(On demand)*

CHEM 6146. Rates and Mechanisms. (3G) Prerequisite: CHEM 3142 with a grade of *C* or better. Consideration of chemical kinetics and mechanism schemes, particularly those of current interest. Three lecture hours per week. *(On demand)*

CHEM 6150. Seminar-Internship. (Variable credit, up to 3G) Prerequisite: consent of Department. Required for all teaching assistants. Opportunities for supervised experience in the teaching of college chemistry will be offered. Graded *Pass/No Credit*. May be repeated for credit. *(Fall, Spring)*

CHEM 6681. Research Seminar. (1G) Discussion of recent developments and special topics in chemistry. Graded *Pass/No Credit. (Fall, Spring)*

CHEM 6682. Research Seminar. (1G) Individual investigation and exposition of the results. May be repeated for credit. *(Fall, Spring)*

CHEM 6900. Research and Thesis. (Variable credit, up to 16G) Laboratory research for the thesis. *(Fall, Spring, Summer)*

Computer Science

Degree: M.S. *Coordinator:* Ken Chen

MASTER OF SCIENCE DEGREE IN COMPUTER SCIENCE

The object of the computer science program leading to the Master of Science degree is to provide advanced skills and knowledge in the planning, design, implementation, testing, and management of computer systems. These skills are necessary for dealing with the problems encountered in business, industry, and governmental computer applications; for holding administrative or engineering positions requiring the planning and implementation of computer systems; for teaching computer science; and/or for further study in computer science, in particular, for doctoral study.

The primary areas of interest are artificial intelligence and its applications, computer engineering, database design and implementation, operating systems, and theoretical computer science.

Degree Requirements. Candidates for the Master of Science degree in Computer Science have the option of: (a) completing 30 semester hours of coursework, writing an expository essay, and passing a comprehensive examination; or (b) completing 24 hours of coursework, writing a thesis for six hours of credit, and passing a comprehensive examination. Either option can be completed on a full-time or part-time basis.

All students are required to complete or have the equivalent of CSCI 5102, 5112, 5141, 6114 and 6160—a total of 15 semester hours. Each student will select with his/her adviser nine to 15 semester hours of additional coursework to meet program requirements/career goals.

With the graduate adviser's approval, students with an emphasis in computer engineering may substitute two computer engineering courses for two of the five required computer science courses.

A maximum of six semester hours of graduate credit may be transferred from other institutions.

Minor in Operations Research. The department of Computer Science participates in the program leading to an interdisciplinary graduate minor in Operations Research. See page 412 for complete information and program requirements.

COMPUTER SCIENCE (CSCI) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

CSCI 40XX. Topics in Computer Science. (3) (3G) *(On demand)*

CSCI 4170. Project Management. (3) (3G) *(Spring) (Alternate Years)*

Courses for Graduate Students and Advanced Undergraduates

CSCI 50xx. Topics in Computer Science. (3) (3G) *(On demand)*

CSCI 5102. Survey of Programming Languages. (3) (3G) Prerequisite: consent of the Department. Study of the concepts underlying various computer languages and comparing and evaluating various language features. History and development of various languages, such as FORTRAN, ALGOL, Ada, Lisp, Smalltalk, Prolog...; evaluation and comparison of various algorithms and language suitability. Selection of languages for problems/environments. Introduction of other languages, such as SNOBOL. *(Fall) (Evenings)*

CSCI 5110. Programming Languages and Compilers. (3) (3G) Prerequisite: CSCI 5141 or consent of Department. Introduction to the concepts and techniques used in describing, defining, and implementing programming languages and their compilers. Introduction to parsing and parser construction; LL and LR grammars; syntax directed translation; data object representations; run time structures; intermediate languages; code optimization. *(Spring)*

CSCI 5111. Advanced Topics in Programming Languages and Compilers. (3) (3G) A continuation of material in CSCI 5110 with emphasis on advanced aspects of optimization, data flow analysis, and error discovery. *(On demand)*

CSCI 5112. Software System Design and Implementation. (3) (3G) Prerequisite: CSCI 5141 or consent of Department. Introduction to the techniques involved in the planning and implementation of large software systems. Emphasis on human interface aspects of systems. Planning software projects; software design process; top-down design; modular and structured design; management of software projects; testing of software; software documentation; choosing a language for software system. *(Spring) (Evenings)*

CSCI 5130. Computer Graphics—Design of Interactive Systems. (3) (3G) Prerequisite: CSCI 5141 or consent of Department. Introduction to design and implementation of computer graphics with emphasis on interactive systems. Output devices/plotters, microfilm, CRT tubes; input devices/digitizers, joy sticks, keyboards, light pens; display of information/graphs, flow charts, histograms; transformations, and translations; projections; special features/blinking, highlighting, reverse video, protected fields. *(On demand)*

CSCI 5131. Simulation. (3) (3G) Prerequisites: CSCI 1100P (or equivalent) and MATH 3122, or consent of Department. Emphasis on the design and derivation of mathematical models of dynamic systems; deterministic simulation; random events; non-deterministic simulation; discrete simulation; comparison and optimization. *(On demand)*

CSCI 5141. Computer Organization and Architecture. (3) (3G) Prerequisite: consent of Department. Introduction to the concepts of computer system design at the register level. Number systems; fetch-execute cycle; data and instruction formats; 0, 1, 2, 3 address machines; addressing modes; functional components; I/O; interrupts; cycle stealing; assembler macros; linking and loading. *(Fall, Spring) (Evenings)*

CSCI 5150. Artificial Intelligence. (3) (3G) Prerequisites: CSCI 2175 and 2161, or consent of Department. To introduce core ideas in AI. Heuristic versus algorithmic methods; problem solving; game playing and decision making; automatic theorem proving; pattern recognition; adaptive learning; projects to illustrate theoretical concepts. *(Fall)*

CSCI 5156. Computer-Aided Instruction. (3) (3G) Prerequisite: consent of the Department. History of CAI; study of current CAI systems; development of man-machine dialogue; programming tools for CAI; information structures for computer-oriented learning. Advantages/disadvantages/costs of CAI. *(On demand)*

CSCI 5170. Formal Languages and Automata. (3) (3G) Prerequisites: one semester of discrete structures or consent of the Department. Detailed study of abstract models for the syntax of programming languages and information processing devices. Languages and their representation; grammars; finite automata and regular sets; context-free grammars and pushdown automata; Chomsky Hierarchy; closure properties of families of languages; syntax analysis. *(On demand)*

CSCI 5171. Logic Programming. (3) (3G) Prerequisite: CSCI 2175 or consent of the Department. Prolog programming language; programming techniques in Prolog; foundations of logic programming including computability of Horn clause logic, completeness of resolution principle, complexity of unification algorithms, and verification of logic programs; principles of implementing logic programming systems; selected topics from applications of logic programming to expert systems, intelligent data base systems, and/or natural language processing. *(On demand)*

CSCI 5175. Computability and Complexity. (3) (3G) Prerequisite: consent of the Department. Study of computability, unsolvability, and computational complexity. Concept of effective computability; recursive functions; mathematical models of computation; universal Turing machines; unsolvable problems; time and space complexity of computations; NP-completeness problems; subrecursive hierarchies. *(On demand)*

Courses for Graduate Students Only

CSCI 60XX. Topics in Computer Science. (3G) Prerequisite: consent of Department. Exposure to current research and literature. Detailed exploration of main theme or a collection of related topics which may vary from term to term. *(On demand)*

CSCI 605X. Advanced Topics in Artificial Intelligence. (3G) Prerequisite: CSCI 5150 or consent of the Department. A selected topic in artificial intelligence, such as machine learning, computer vision, heuristic search, natural language processing. (May be repeated for credit as topics vary and with the approval of the Department.) *(Fall, Spring)*

CSCI 6104. Programming Environments, Benchmarks, Standards. (3G) Prerequisites: CSCI 5141 or consent of the Department. An introduction to the concepts in evaluating programming environments, establishing benchmarks, and constructing and using standards. A study of various programming environments, including languages, modes of operation and support equipment. The process of constructing benchmarks for evaluation of software and hardware. Also the selection and use of standards for various computer-related processes. *(On demand)*

CSCI 6106. Computer Systems-Selection and Operation. (3G) Prerequisite: CSCI 5141 or consent of the Department. An introduction to the selection and operation of a computer system from a performance point of view. Determining and constructing the specifications for acquisition of a computer system; evaluation of bidder responses; benchmarking computer systems; selecting and contracting for a computer system; tuning a system to an installation's environment. *(On demand)*

CSCI 6114. Advanced Programming Techniques and Data Structures. (3G) Prerequisite: CSCI 5141 or consent of Department. Introduction to techniques and structures used and useful in design of sophisticated software systems. Records; arrays; linked list structures; trees; graphs; storage management and garbage collection; searching and sorting; interprogram communication; recursion; reentrancy; and co-routines; parameter passing; naming conventions; stacks. *(Fall) (Evenings)*

CSCI 6115. Advanced Topics in Programming Techniques and Data Structures. (3G) Prerequisite: CSCI 6114. Continuation and extension of CSCI 6114. File organizations and optimization; storage management; hashing; string representations; language considerations. *(On demand)*

CSCI 6132. Computer Modeling and Simulation. (3G) Prerequisites: CSCI 5131 and consent of Department. Introduction to modeling of complex systems. Emphasis on modeling of computer systems and configurations. *(On demand)*

CSCI 6144. Operating Systems Design. (3G) Prerequisite: CSCI 6114 or consent of Department. Introduction to features of a large-scale operating system with emphasis on resource-sharing environments. Computer system organization; resource management; multiprogramming; multi-processing; file systems; virtual machine concepts; protection and efficiency. *(On demand)*

CSCI 6155. Knowledge-Based Systems. (3G) Prerequisite: CSCI 5150. Knowledge representation; automatic deduction; techniques for handling uncertainty and inexact knowledge; principles of rule-based systems and frame-based systems. Selected study of actual knowledge-based systems and knowledge engineering tools. A course project of building a knowledge-based system. *(Spring)*

CSCI 6160. Data Base Systems, Design and Management. (3G) Prerequisite: CSCI 6114 or consent of the Department. Introduction to principles of data base design, and survey of alternative data base organizations and structures. Logical data base organization; schemas; subschemas; data description languages; hierarchical, network, and relational data bases; data base management systems; normal forms. *(Spring) (Evenings)*

CSCI 6161. Advanced Topics in Data Base Systems, Design and Management. (3G) Prerequisite: CSCI 6160. Continuation of CSCI 6160. Topics include addressing techniques; physical structures; searching; compaction techniques; storage hierarchies; multiple-key retrieval; efficiency and security considerations. *(On demand)*

CSCI 6164. Design and Implementation of Online Management Information Systems. (3G) Prerequisites: CSCI 6114 or consent of the Department. The fundamental concepts and philosophy of planning and implementing an on-line computer system. Characteristics of on-line systems; hardware requirements; modeling of on-line systems; performance measurement; language choice for on-line systems; organization techniques, security requirements; resource allocation. *(On demand)*

CSCI 6166. Computer Communications and Networks. (3G) Prerequisite: CSCI 6114 or consent of the Department. Introduction to the concepts of computer networks; their operating systems; and communication between nodes. Types of networks; communications and protocols; routing; message switching; optimization; distributed processing; coding and compaction. *(On demand)*

CSCI 6690. Computer Science Seminar. (3G) Prerequisite: at least six graduate CSCI/CPGR courses and consent of Department. Experience for the advanced M.S. student on current problems of computer design and application. (May be used by a student or small group of students to work with a professor on a topic of mutual interest. May be used to give a course on a topic announced in advance.) *(On demand)*

CSCI 6880. Individual Study. (1-3G) Prerequisites: At least 18 graduate CSCI/CPGR hours and consent of Department. With the direction of a faculty member, students plan and implement appropriate objectives and learning activities to develop specific areas of expertise through research, reading, and individual projects. May be repeated for credit. *(On demand)*

CSCI 6991. Computer Science Thesis. (0-6G) Prerequisite: Consent of Department. Graduate thesis research. Detailed exploration of an area of computer science chosen for thesis research. May be repeated for credit but no more than six hours may be applied to M.S. degree requirements. *(Fall, Spring)*

COMPUTER SCIENCE/ENGINEERING (CPGR) COURSE DESCRIPTIONS

CPGR 4181. Microcomputer Interfacing. (3) (3G) Prerequisite: EEGR 2112, CSCI 2140, or permission of the Department. Signal conditioning; A/D conversion; noise; transmission line effects; signal processing; D/A conversion; and serial/parallel interfaces. *(Alternate years)*

CPGR 5182. Computer Arithmetic. (3) (3G) Prerequisite: permission of the Department. Principles, architecture, and design of fast two operand adders; multioperand adders, standard multipliers, and dividers. Cellular array multipliers and dividers. Floating point processes, BCD, and excess three adders, multipliers, and dividers. *(Alternate years)*

CPGR 6146. Microprogramming—Theory and Applications. (3G) Prerequisite: CSCI 5141 or consent of the Department. Registers; buses; gates; target/host machines; micro instruction architecture; horizontal vs. vertical organizations; microprograms; advantages vs. disadvantages of microprogramming; examples of microprogrammable systems. *(On demand)*

CPGR 6181. Switching and Automata Theory. (3G) (Formerly EAD 681/EE 6181) Prerequisite: consent of the Department. Topics include sets, relations, lattices, Boolean algebras; functional decomposition and symmetric functions; threshold logic; multiple-valued logic; fault detection and fault tolerant design; finite state machines, incompletely specified machines, minimization; state identification and fault detection experiments; finite state recognizers. *(Alternate years)*

CPGR 6182. Advanced Computer Architecture. (3G) Prerequisite: CSCI 5141 or equivalent. Survey of existing and proposed architectures; pipelined, dataflow, restructurable, and supercomputer architectures. Multicomputer and multiprocessor architectures. Impact of VLSI on architecture. *(On demand)*

Criminal Justice

Degree: M.S. *Coordinator:* David Hirschel

MASTER OF SCIENCE DEGREE IN CRIMINAL JUSTICE

The Criminal Justice program leading to the Master of Science degree provides graduate preparation and enhancement for careers in criminal justice agencies. The program is interdisciplinary in nature and utilizes social and behavioral sciences perspectives to study law, crime and social deviance and to examine critically the systems that have evolved in response to these problems. The objectives of the master's program are: (1) to provide present and future criminal justice personnel with the educational background needed to function effectively in the ever-changing criminal justice system; (2) to familiarize students with the nature, functions and methods of research as well as with the existing body of research on criminal justice problems; (3) to provide the criminal justice system with qualified candidates for careers in administration, law enforcement, planning and analysis, juvenile justice, corrections, and teaching in community colleges; and (4) to prepare students for advanced graduate work.

Students may enroll in the Master of Science program on either a full-time or part-time basis. Classes are scheduled in the evening to accommodate the part-time student.

Degree Requirements. A minimum of 36 semester hours is required. All students must complete four core courses: CJUS 6100-The Criminal Justice System; CJUS 6101-The Nature and Theory of Crime; CJUS 6102-Research in Criminal Justice; and CJUS 6104-Criminal Justice and Social Control with a grade of *B* or above in each of the core courses. These courses should be taken at the beginning of the program. Students may receive credit for a maximum of 12 semester hours

of graduate courses from outside the department. A maximum of six hours where the grade was *B* or above may be transferred from another institution. Students select the option of (1) passing a comprehensive written examination after completion of all coursework, or (2) completing a thesis as part of the 36-hour degree requirement. Students must be approved by the graduate committee to take the thesis option. At least 30 semester hours must be taken in residence. Transfer courses will be accepted at the discretion of the Department and must be consistent with the student's overall program.

Program Approval and Continued Enrollment. Each student shall select a major professor during the first semester of enrollment. The major professor must be a faculty member in the Department of Criminal Justice and shall serve as chairperson of the student's Academic Committee. Each student shall select an Academic Committee, which will be composed of at least two and no more than three faculty members, prior to the completion of 18 semester hours of coursework. The academic committee will be responsible for the approval of the student's curriculum. Each student must satisfy University requirements for continued enrollment of graduate students.

Admission to Candidacy. General academic regulations will apply to application for admission to candidacy. Any identifiable entrance deficiencies must be removed by the time of application. In addition, after completion of the core requirements (CJUS 6100, 6101, 6102 and 6104) all students must successfully complete a qualifying examination administered by the student's Academic Committee.

CRIMINAL JUSTICE (CJUS) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

CJUS 4000. Topics in Criminal Justice. (1-6G)

CJUS 4200. Problems and Decisions in Criminal Justice. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

CJUS 5103. Program Planning and Evaluation in Criminal Justice. (3) (3G) Prerequisite: junior standing and consent of the Department. Applied research will be viewed as the foundation for criminal justice planning; distinctions between basic and applied research will be emphasized. Emphasis will be placed on the theoretical bases of planning in general and criminal justice planning in particular. The role of evaluation as it relates to criminal justice programs will be discussed to assist the student in predicting the success or failure of a project or program. *(Alternate years)*

CJUS 5131. Police Problems and Practices. (3) (3G) Prerequisite: junior standing and consent of the Department. Consideration will be given the role and function of police on the operational level. Discretionary decision-making and the legal, social and institutional contexts in which it occurs are also considered. Application of interpersonal and intrapersonal theories and concepts to police problems and practices will be included. *(Alternate years)*

Courses for Graduate Students Only

CJUS 6000. Topics in Criminal Justice. (3-6G) Special issues; may be repeated for credit. *(Alternate years)*

CJUS 6100. The Criminal Justice System. (3G) Major subsystems of the criminal justice system will be examined. These include law enforcement, criminal courts and correctional agencies, as well as the juvenile offender subsystem. The linkage of these subsystems to each other and to the community and society at large will be discussed. *(Fall)*

CJUS 6101. The Nature and Theory of Crime. (3G) Definitions and patterns of criminal behavior will be examined. Major theoretical perspectives on crime, including historical, philosophical, individual, community-oriented and societal approaches will be considered. *(Fall)*

CJUS 6102. Research in Criminal Justice. (3G) Research methodology and statistics will be considered with an emphasis on applications to criminal justice settings. *(Spring)*

CJUS 6104. Criminal Justice and Social Control. (3G) Ethical issues of social control and criminal justice responses to such issues will be considered. The course will examine and critique the assumptions underlying systems of social control, especially as they relate to the application of criminal sanctions; such issues as drug addiction and alcoholism will be included in the examination. *(Spring)*

CJUS 6120. Criminal Justice Management and Decision-Making. (3G) The application of generic principles of management and supervision to operational problems confronted by criminal justice agencies will be discussed. Particular attention will be devoted to decision-making and discretion in a criminal justice setting. *(Fall)*

CJUS 6130. Law Enforcement Systems. (3G) Consideration of the elements of law enforcement agencies as subsystems of the total criminal justice system. Attention will be given to the relationship between the law enforcement subsystems and the community. *(Alternate years)*

CJUS 6132. Legal Issues in Law Enforcement. (3G) Advanced consideration of law applicable to the functions of the police administrator and the line police officer will be considered. Attention is given to major issues in constitutional, statutory, court-made and administrative law governing search and seizure, arrest, interrogation, use of force, jurisdiction, civil and criminal liability of administrators and officers, rights of officers and rights of suspects. *(Fall)*

CJUS 6140. Prosecution and Adjudication Processes. (3G) This course will examine the functions and powers of prosecutors, defense attorneys, judges and juries and will include a discussion of plea bargaining and court procedure. *(Alternate years)*

CJUS 6150. Corrections. (3G) The focus of this course will be on the function of correctional agencies. Principles of punishment and a historical analysis of correctional institutions and programs will be presented. Prisons, jails, probation and parole systems will be discussed. *(Alternate years)*

CJUS 6151. Correctional Strategies: Rehabilitation and Reintegration. (3G) Efforts to change offender behavior and to facilitate the development of offender-community linkages will be discussed. Institutional classification and treatment strategies, pre-release and temporary release programs, innovative uses of probation and parole services, community residential programs and new dispositional models; e.g., sentencing to community service and restitution, will be examined. *(Alternate years)*

CJUS 6152. Legal Issues in Corrections. (3G) Consideration of major legal issues pertaining to corrections, including sentencing, probation, restitution, prisons, parole, pardon and restoration of rights will be discussed. Emphasis will be given to legal issues often confronted by correctional administrators and probation and parole personnel. *(Alternate years)*

CJUS 6160. Juvenile Justice Systems. (3G) The process by which specific behaviors are identified as delinquent and the responses of the juvenile justice system to such behaviors will be analyzed. Laws dealing with the juvenile justice system, the historical development of the system and the effectiveness of innovative responses to delinquency will be considered. *(Alternate years)*

CJUS 6800. Directed Individual Study in Criminal Justice. (3G) Supervised investigation of a criminal justice problem of special interest to the student. May be repeated one time with the approval of the student's major professor or academic committee. *(Fall, Spring)*

CJUS 6900. Thesis. (6G) Independent research on a significant criminal justice topic approved by the student's academic committee. *(Fall, Spring)*

Economics

Degree: M.S. *Coordinator:* Ted Amato

The primary objective of the Master of Science degree program in Economics is to develop professional competencies in the application of economic theory and economic techniques. Graduates are well trained to pursue careers in the public and private sectors and to pursue additional graduate education leading to the Ph.D. in economics.

Degree Requirements. The Master of Science degree comprises at least 30 credit hours, with a maximum of six (6) hours of transfer credit accepted from an accredited institution. At least 15 hours of credit applied toward the degree must be in courses open only to graduate students. The program is organized into three curriculum components: (1) a core curriculum in economic theory and econometrics; (2) an individualized curriculum of interrelated coursework; and (3) a research project tailored to the needs of terminal master's students or a thesis for students considering doctoral study in economics.

Core Curriculum

ECON 6201 Advanced Macroeconomic Theory
ECON 6202 Advanced Microeconomic Theory
ECON 6112 Graduate Econometrics
ECON 6218 Advanced Business and Economic Forecasting

In addition, students who choose to complete a thesis must successfully complete ECON 6999, Master's Thesis, while students enrolled in the non-thesis option must complete ECON 6901 and 6902, Research Methods I and II.

Individualized Curriculum

The purpose of the individualized curriculum is to provide students with the opportunity to acquire specialized theoretical and analytical skills related to their own areas of interest and expertise. Elective fields of interest could include money, banking and finance, international trade and finance, economic analysis for business decision making, or economic and business forecasting. The program also permits the development of individualized specializations in areas which are complementary to economic theory and analysis.

Minor in Operations Research. The Department of Economics also participates in the program leading to an interdisciplinary graduate minor in Operations Research. See page 412 for complete information and program requirements.

ECONOMICS (ECON) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates
Additional work required of students receiving graduate credit.

ECON 4100. Mathematical Economics. (3) (3G)

ECON 4105. Negotiations and Bargaining Strategy. (3) (3G)

ECON 4112. Econometrics II. (3) (3G)

ECON 4116. Public Finance. (3) (3G)

ECON 4117. Business and Economic Forecasting

ECON 4135. Economics of Development (3) (3G)

ECON 4150. Urban and Regional Economics. (3) (3G)

ECON 4160. Economics of Transportation. (3) (3G)

ECON 4171. Economics of International Trade. (3) (3G)

ECON 4172. Economics of International Finance. (3) (3G)

ECON 4177. History of Economic Thought. (3) (3G)

ECON 4180. Industrial Organization and Public Policy. (3) (3G)

ECON 4181. Energy and Environmental Economics. (3) (3G)

ECON 4182. Public Utilities. (3) (3G)

ECON 4449. Work-Study Program in Economics. (3-6 or 3-6G hours credit, by determination of Department)

Courses for Graduate Students and Advanced Undergraduates

ECON 5090. Topics in Economics. (1-3) (1-3G) Prerequisite: consent of the Department. Topics from various areas of economics. Credit hours will vary with the topic offered. May be repeated for credit as topics vary. *(On demand)*

ECON 5102. Economics for School Teachers. (3) (3G) Primarily designed for school teachers. Emphasis on issues and examples that lend themselves to classroom presentation. Includes the development, meaning and functioning of institutions that characterize the U.S. economy. May not be taken for upper-level elective credit in business or economics but may be taken for general University elective credit by College of Business majors and others. Not accepted for graduate credit in the MBA program. *(Fall, Spring, Summer)*

ECON 5120. Economics of Futures and Options Markets. (3) (3G) Prerequisites: ECON 3122, ECON 3112. Analysis of futures and options markets. Topics include: theory and application of rational expectations to commodity futures and options, theory and application of economics under uncertainty, statistical behavior of commodity futures and options prices, hedging, regulation of commodity futures markets, and analysis of the success and failure of commodity futures contracts. *(On demand)*

Courses for graduate students in Economics or with permission of Graduate Coordinator

ECON 6001. Advanced Topics in Macroeconomics. (3G) Prerequisites: ECON 5112, 6201 and 6202. Advanced treatment of selected issues in macroeconomics. *(On demand)*

ECON 6002. Advanced Topics in Microeconomics. (3G) Prerequisites: ECON 5112, 6201 and 6202. Advanced treatment of selected issues in microeconomics. *(On demand)*

ECON 6100. Graduate Mathematical Economics. (3G) Economic problems are analyzed with quantitative techniques. Topics covered include the study of economic growth models, utility maximization, homogeneous functions, dynamic systems, applications of linear programming, and constrained optimization. *(On demand)*

ECON 6112. Graduate Econometrics. (3G) Advanced study of the theory and application of statistics as it relates to economic problems. Topics include: identification and estimation of simultaneous systems of equations, seasonal adjustment, autocorrelated disturbances, maximum likelihood estimation. *(Fall)*

ECON 6201. Advanced Macroeconomic Theory. (3G) Prerequisites: Admission to graduate program. Theories of aggregate income determination, inflation, unemployment, interest rates and economic growth; macroeconomic consumption and investment behavior; the business cycle. *(Fall)*

ECON 6202. Advanced Microeconomic Theory. (3G) Prerequisites: admission to graduate program. Theories of the firm, of the consumer, and of resource owners; determination of prices under different market structures; general equilibrium analysis and welfare economics. *(Fall)*

ECON 6218. Advanced Business and Economic Forecasting. (3) (3G) Prerquisite: ECON 6112. Develops forecasting techniques used in business decision making and techniques used in forecasting macroeconomic variables. Topics include: estimation, identification and prediction using ARMAX, state space and Box-Jenkins models; spectral analysis; linear filtering. *(Spring)*

ECON 6235. Monetary and Financial Theory. (3G) Prerequisites: ECON 6112, 6201 and 6202. Theory and empirical tests of money supply, money demand, and financial markets; portfolio theory with special attention to portfolio choices of banks; term structure of interest rates; dynamic models of money and economic activity. *(Spring, Summer)*

ECON 6240. Economics of International Finance. (3G) Prerequisites: ECON 6112, 6201 and 6202. Open economy macroeconomics, international transmission of inflation and unemployment, internal and external balance; balance of payments and international payments mechanisms; determination of exchange rates and effects of hedging and speculation. *(Spring, Summer)*

ECON 6241. Economics of International Trade. (3G) Prerequisites: ECON 6112, 6201 and 6202. Examines the causes and consequences of trade using Ricardian and neoclassical models. Considers extensions, modifications and empirical tests of these models. Analysis of tariffs, quotas and other trade restrictions, export subsidies and trends in current trade policy. *(On demand)*

ECON 6250. Advanced Urban and Regional Economics. (3G) Prerequisites: Admission to graduate program. Applications of microeconomic theory to problems of cities, metropolitan areas and regions; methods in regional analysis, location theory, land-use planning, measurement of economic activity; transportation, housing, poverty, and growth issues. *(On demand)*

ECON 6260. Managerial Decision Making. (3G) Prerequisites: ECON 6112, 6201 and 6202. Decision making by firms; demand and production functions, relation between cost and production functions; risk analysis. *(Spring, Summer)*

ECON 6901. Research Methods for Economists I. (3G) Prerequisites: ECON 6112, 6201 and 6202. Research programs in economics; problem identification; interpretation of statistical results, bibliographic search, data sources and collection, selection of statistical technique, preparation of reports and proposals. *(Spring)*

ECON 6902. Research Methods for Economists II. (3G) Prerequisites: ECON 6112, 6201, 6202 and 6901. Critique of economic research and reports, presentation of econometric results and reports. The student will develop a research project, perform statistical tests, and present the results orally and in a major research paper. *(Summer)*

ECON 6999. Graduate Thesis Research. (0-6G) Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

Education

The College of Education and Allied Professions offers graduate degree and certificate programs in Counseling and Guidance, Curriculum and Instruction, Educational Administration, Teaching Specialties and Health Education.

The **Master of Education** degree is designed to provide sound programs of graduate professional study for advanced certification which are built upon a body of knowledge and experience common to several types of professional needs and expertise. Graduates of these programs will be able to employ expertise in a variety of ways: (a) as teachers in the primary grades, intermediate grades, middle grades, secondary grades, special education, reading, English as a second language, and health education; (b) as administrators and support personnel in the areas of administration and supervision, curriculum and instruction, instructional technology: computers, and school counseling; and (c) as students in programs for advanced study and doctoral programs. Courses appropriate for teacher certification renewal, additional graduate certification fields, or special needs for individual professional growth also are available.

The **Master of Arts** degree is awarded to students who successfully complete an approved program of study in school counseling, community counseling or college student personnel.

Certificate of Advanced Study (Sixth-Year) Programs. Beyond the master's level, the College offers Certificate of Advanced Study programs in the following areas: Counseling and Guidance; Elementary Education (Early Childhood and Intermediate); School Administration; Secondary Education (English, Mathematics and History); Curriculum and Instruction Specialists (Supervision and Instructional Technology: Computers); and Special Education. These programs are planned to meet the guidelines of the North Carolina State Board of Education and persons who successfully complete a program will be granted a Level II Graduate Certificate in their field of study.

Doctoral Studies. The College offers the Doctor of Education (Ed.D.) degree in Educational Leadership through the Department of Educational Administration. The College also collaborates with The University of North Carolina at Chapel Hill to offer the Doctor of Education (Ed.D.) in Educational Administration. The degree is conferred by The University of North Carolina at Chapel Hill.

TEACHER CERTIFICATION

Post-Baccalaureate. Special students who have already completed a baccalaureate degree may be admitted to The University for teacher certification purposes. Specific courses and activities necessary for certification will be determined upon an evaluation of the person's credentials by the Dean's Office, College of Education and Allied Professions. This evaluation will take into account the student's prior preparation in accordance with the guidelines of The University's approved program in teacher education. A plan of study leading to certification will be developed with the student and a copy of the approved plan filed with the State Department of Public Instruction.

Graduate and Advanced Graduate. North Carolina provides graduate certification and the Certificate of Advanced Study for satisfactory completion of approved master's and sixth-year programs. The graduate certification may be of the same type or field received at the completion of a baccalaureate degree program or it may be in a special service personnel area such as Administration, Supervision, Counseling and Guidance, Reading, or Special Education. Students electing graduate certification in Elementary Education, Middle Grades Education and the special service personnel areas major in Education and pursue a Master of Education degree program. Students who select Secondary certification areas generally will major in Education but may elect to major in a graduate program within the College of Arts and Sciences in disciplines specific to the certification sought.

Certificate of Advanced Study certification is based upon the completion of approved programs of study beyond the master's degree. The Certificate of Advanced Study (CAS) may be in a teaching

field or one of the special service personnel areas. At UNC Charlotte, students electing the CAS programs are admitted and enrolled in the College of Education and Allied Professions. Formal coordination is maintained with other appropriate departments and colleges which provide coursework needed in many of the CAS programs.

EDUCATION

Counselor Education

Degree: M.A.* *Coordinator:* Mary T. Burke

The Counselor Education Program offers coursework at the graduate level leading to the master of arts degree in school counseling, community counseling and college student personnel. The school counseling track includes specializations in elementary and secondary school counseling; the community counseling track provides specialization in either community agency or career counseling; the college student personnel track prepares students to work in various areas of residence life in a campus setting. These tracks prepare counselors to work in a variety of settings including elementary and secondary schools, community colleges and universities, correctional institutions, health agencies, rehabilitation centers, religious organizations, and other environments in which counseling is provided. Graduates of this program are prepared to:

1. Work individually and in groups with clients on educational, vocational, social, emotional, physical, spiritual, and/or organizational concerns.
2. Consult with other professionals concerning client's needs.
3. Provide information and understanding to clients in the areas of educational, social and/or career planning.
4. Conduct needs assessment, program design and evaluation.

Specific knowledge or skills related to the specialty areas also will be developed.

Master's Degree Programs and Requirements. The 60-semester hour school counseling track leads to Advanced Graduate certification (equivalent to Sixth Year Program). All tracks have core requirements drawn from courses in education and counseling. Additional required and elective coursework is developed with the student's adviser so that the final program is consistent with the student's professional goals as well as programmatic and state Department of Public Instruction guidelines.

All students must successfully complete either a written and oral comprehensive exam (given in October and February of each year) or a master's project as a requirement for graduation. While these would be completed at or near the end of the student's program of study, the student should consult with the adviser within the first 24 hours of coursework concerning procedures and preparation for either option.

*Conversion to M.A. degree pending.

CERTIFICATE OF ADVANCED STUDY

The Certificate of Advanced Study is a program for the post-master's student (not holding a 60 hr. degree) seeking to further his/her skills in counseling and guidance. Students are expected to continue to refine their skills in delivering counseling services as well as to develop competencies in the administration of counseling programs and in supervising other helping professionals.

The Certificate of Advanced Study requires 30 hours beyond the master's degree. A typical program would consist of the following; Required Courses (15 hours): ADMN 7250, EDUC 6110, CSLG 7801, 7120, 7400 and 7110; and electives (12 hours). Electives will be selected in consultation with the adviser. These electives may include courses offered for graduate credit within the College or in other departments.

Residence Requirements. All coursework for the Certificate of Advanced Study Programs must carry UNCC residence credit. Six semester hours of approved coursework may be accepted for transfer credit from another accredited institution. Of the coursework carrying UNCC residence credit nine semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.

2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester of one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

COUNSELING (CSLG) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

CSLG 5100. Counseling Needs of Women. (3) (3G) Topics include women's development and needs, the problems they bring to counselors, strategies for helping with them, myths about women and biases in psychological research. *(Spring) (Alternate years)*

Courses for Graduate Students Only

CSLG 6000. Selected Topics in Counseling. (3G) Prerequisite: permission of Department of Human Services. Examination of selected areas of interest in the counseling professions. May be repeated for credit with departmental approval as topics vary. *(Fall, Spring, Summer)*

CSLG 6100. Counseling Theory. (G) Examination of the counseling relationship from various theoretical frameworks, including client-centered, Gestalt, psychoanalytic, transactional analysis, rational emotive, reality, and behavior theories. *(Fall, Spring, Summer)*

CSLG 6101. Ethics, Professional Issues and Consultation. (3G) Prerequisites: CSLG 6100, 6110, 6120. Reviews ethical and legal responsibilities, ethical standards, interpretations of laws by local authorities, court decisions, etc., that impact the counseling profession. Skills of practical, ethical, and legal consultation are also emphasized. *(Fall, Summer)*

CSLG 6109. Research in Counseling. (3G) Examination of principles and practices for research and development of programs in counseling with emphasis on developmental designs, preventive programs, objectives and organizations. *(Fall, Spring)*

CSLG 6110. Counseling Techniques. (3G) Examination of concepts of individual counseling and the means for establishing facilitative relationships including competence in basic counseling skills and interventions. *(Fall, Spring)*

CSLG 6111. Advanced Counseling Techniques. (3G) Prerequisites: CSLG 6100, 6110. Counseling interventions useful in facilitating client change and growth that focus from an action-oriented, problem management perspective. Strategies for cognitive, affective, and behavioral change will be practiced. *(Fall, Spring)*

CSLG 6115. Person to Person Relationships. (3G) Examination of concepts and methods for improving human relationships. This course has an experiential component. *(On demand)*

CSLG 6120. Group Counseling. (3G) Investigation of concepts of group counseling and the means for developing facilitative interaction in groups which may include an experiential component as a major learning activity. *(Fall, Spring)*

CSLG 6121. The Leadership and Design of Structured Groups. (3G) Prerequisite: CSLG 6100, 6110. Methods of creating psychoeducational groups. Focus on applying psychological theories to the selection of group content. Leadership issues such as screening, dealing with difficult members, and leader roles are addressed. *(Spring)*

CSLG 6145. Counseling Needs of Special Populations. (3G) Prerequisites: CSLG 6100, 6110. Approaches to counseling that focus on multicultural differences so the counselor will be more effective dealing with clients from a variety of cultural backgrounds. *(Fall) (Alternate years)*

CSLG 6150. Occupational Information. (3G) A counseling-oriented course designed to help the counselor and/or career education teacher develop the ability to use career information with emphasis on understanding of occupational information, systems of collection and usage forms. *(Fall)*

CSLG 6152. Approaches to Career Development (K-12). (3G) Designed to help the counselor or vocational development coordinator gain an understanding of and skills necessary for (1) the development, management and evaluation of a comprehensive, competency-based K-12 career education/counseling program, (2) infusing career education into K-12 curriculum in a counselor/consultant capacity, (3) establishing and leading successful individual and group career development activities. *(Spring)*

CSLG 6200. Introduction to Theories of Family Counseling. (3G) Examination of appropriate interventions in working with families focusing on major theorists and techniques in the field. Does not prepare students to function as a marriage or family practitioner. *(Fall) (Alternate years)*

CSLG 6800. Individual Study in Counseling. (1-6G) Prerequisite: permission of Department of Human Services. Designed to permit students to conduct research on selected topics, examine specific counseling literature and the development of special projects under the direction of a faculty member. May be repeated for credit with department approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

Courses for Advanced Graduate Students Only

CSLG 7110. Individual Assessment. (3G) Prerequisite: EDUC 6109 or PSYC 4140. Examination of the major aptitude, intelligence and other psychological tests commonly used in counseling with emphasis on test theory as well as the administration, scoring and interpretation of tests and the communication of their results. *(On Demand)*

CSLG 7120. Administration and Supervision of Counseling Services. (3G) Planning, operation, implementation and supervision of counseling and guidance services in schools and agencies with emphasis on the development of administrative and supervisory skills. *(On demand)*

CSLG 7140. Elementary School Counseling and Guidance. (3G) Prerequisites: CSLG 6100, 6110, 6120 or permission of the instructor. Introduction to the guidance function in the elementary school with emphasis on the counselor's role in counseling, consulting and coordinating school and community resources for the optimum benefit of the child. *(Fall, Summer)*

CSLG 7141. The Secondary School Counselor. (3G) Prerequisites: CSLG 6100, 6110 and 6120, or permission of instructor. Development of functional skills necessary for integration of counseling activities into secondary school curriculum. Focus on the role of the counselor in classroom guidance, consultation, program design, curriculum and administration of special programs. *(Spring) (Alternate years)*

CSLG 7151. Approaches to Adult Career Development. (3G) Prerequisite: CSLG 6150. Designed to provide skills for the career development specialist who needs to survey an environment in which adults are seeking career counseling; assess needs; develop interventions strategies to meet needs; and assess outcomes. *(Fall) (Alternate years)*

CSLG 7153. Research Techniques and Computer Applications in Career Counseling. (3G) Prerequisites: EDUC 6101, 6109 and 6110. Skills in preparing a literature review upon which to base a research study; critiquing theoretical, philosophical, and research material and reports; and conducting and reporting a research study. Focus on understanding the effective application of computer technology to the provision of career related services in mental health, education, rehabilitative or other human services settings. *(Spring) (Alternate years)*

CSLG 7170. Community Counseling and Management. (3G) Prerequisites: CSLG 6100, 6110. Addresses the specific needs of students preparing for counseling careers in community agency settings. Topics include the roles and functions of a professional counselor, assessing the needs of an agency population and the interworkings of various agencies and agency networks. *(Fall) (Alternate years)*

CSLG 7180. Introduction to College Student Personnel. (3G) Prerequisites: CSLG 6100, 6110. An overview of college student personnel services. The history and philosophy of student affairs will be explored and current trends and the state of existing student services will be discussed. *(Fall) (Alternate Years)*

CSLG 7181. Theories of College Student Development. (3G) Prerequisite: CSLG 6100, 6110. The major theories that apply to college students and their intellectual, social, and moral development. Emhasis given to the developmental needs of both traditional and non-traditional students. *(Spring) (Alternate Years)*

CSLG 7182. Organization and Management of College Student Personnel. (3G) Prerequisite: CSLG 7180. An overview of student services and the skills involved in program management. Legal issues, ethical issues, funding, and budgeting will be addressed. *(Fall)*

CSLG 7190. Introduction to Pastoral Counseling. (3G) Prerequisites: CSLG 6100, 6110. Designed to provide a basic introduction to the field of pastoral counseling. Both the theological and counseling dimensions will be investigated. *(On demand)*

CSLG 7191. Advanced Issues in Pastoral Counseling (3G) Prerequisite: CSLG 7190. Specific content relevant to pastoral counseling will be discussed. Didactic and experiential foci will combine to enrich the student's experience. *(On demand)*

CSLG 7205. Techniques of Family Counseling. (3G) Prerequisites: CSLG 6100, 6200, SOCY 4632. An overview of techniques used by family counselors working from communications, structural or strategic orientations. *(On demand)*

CSLG 7400. Sixth-Year Field Experience in Counseling and Guidance. (3G) Field experience to allow the student to integrate knowledge while under supervision, as well as a weekly seminar for instruction and support. Emphasis on supervisory, consultative and program evaluative competencies consistent with the student's career objectives. Offered on a *Pass/No Credit* basis. May be repeated for credit. *(On Demand)*

CSLG 7430. Practicum in Counseling and Guidance. (3G) Prerequisites: CSLG 6100 and 6110. Supervision of individual and group counseling interventions conducted in field settings; special attention to the development of evaluative criteria for self and peer assessment. A minimum of 10 hours per week in field placement offered on a *Pass/No Credit* basis. May be taken once for repeat credit with departmental approval. *(Fall, Spring, Summer)*

CSLG 7435. Internship. (3G) Prerequisites: Core courses and CSLG 7430. Students will participate in delivering counseling services in a field setting and receive supervision of their work in weekly seminars. A minimum of 10 hours per week in field placement. Offered on a *Pass/No Credit* basis. *(Fall, Spring)*

CSLG 7436. Advanced Students Internship. (3G) Prerequisites: Core courses, CSLG 7430, 7435. Continuation of CSLG 7435. Students will function as a counselor in field settings and have the opportunity to demonstrate advanced level skills in weekly seminars. A minimum of 20 hours per week in field placement.Offered on a *Pass/No Credit* basis. *(Fall, Spring)*

CSLG 7801. Individual Study. (1-6G) Prerequisite: permission of the Department of Human Services. With the direction of a faculy member, students will plan and implement appropriate objectives and learning activities to develop specific areas of expertise through research, readings and individual projects. Offered only on a *Pass/No Credit* basis. May be repeated for credit. *(Fall, Spring, Summer)*

HUMAN SERVICES (HUSV) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

HUSV 4115. Effective Human Systems. (3) (3G) Systems approach to human development with emphasis on the need for coping skills which allow individuals to function effectively in various settings in life. *(Fall, Spring)*

HUSV 5000. Selected Topics in Human Services. (3-6) (3-6G) Prerequisite: permission of the Department of Human Services. Seminars, independent study and clinical experiences. May be repeated for credit, with approval. *(Fall, Spring)*

HUSV 5103. Substance Abuse: Primary Prevention. (3) (3G) Primary prevention concepts, research, and programming and introduction to psychoactive drugs, their effects on the human physical function, intellectual perception, and psyche. *(Spring) (Evenings)*

HUSV 5104. Substance Abuse: Approaches to Intervention and Treatment. (3) (3G) Concepts of drug dependency and various approaches to intervention and treatment. *(Fall) (Evenings)*

Courses for Graduate Students Only

HUSV 6100. Adjustment Problems, Children and Youth. (3G) Study of adjustment problems of childhood and adolescence with emphasis on theoretical postulates as they relate to problems of behavior and attitudes in educational environments. *(Fall, Spring) (Evenings)*

HUSV 6102. Learning and Development. (3G) In-depth study of selected theories of learning and development. *(Fall, Spring, Summer) (Evenings)*

HUSV 6110. Parent Education. (3G) Study of principles and practices for research, development of programs and evaluation in parent education. *(On demand) (Evenings)*

HUSV 6115. Strategies and Designs in Human Development and Learning: Child Advocacy. (3G) Study of principles and practices for educational personnel to employ as child advocates. *(On demand) (Evenings)*

HUSV 6120. Creativity, Learning Environments and Experiences. (3G) Investigation of theories of creativity and their relationship to curriculum development. *(Spring, Summer) (Evenings)*

HUSV 6130. Concepts of Teaching and Learning: Children's Play. (3G) Examination of theories, trends and current practices in children's play. *(Spring) (Evenings)*

Courses for Advanced Graduate Students Only

HUSV 7135. Readings in Learning and Development. (3G) Examines research data about the development of human behavior interpreted in terms of multiple disciplines, including psychology, anthropology and ethnology. *(On demand) (Evenings)*

EDUCATION

Curriculum and Instruction

Degree: M.Ed. *Chairperson:* Corey R. Lock

MASTER OF EDUCATION DEGREE

The Department of Curriculum and Instruction offers M.Ed. programs for students seeking teaching certification in Elementary Education, Middle Grades Education and Secondary Education

Degree Requirements. The candidate for the Master of Education degree must successfully complete a minimum of 36 semester hours of work in courses approved for graduate credit including at least 18 hours in courses which are open to graduate students only, have a GPA of 3.0 or higher and have earned no more than two grades of *C* in coursework submitted for the degree.

In addition, all students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these would be completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of coursework concerning procedures and preparation for either option.

Approval of Individual Programs. Approval of each student's program will be the responsibility of an adviser. The student also will have a graduate committee for consultation and evaluation. The committee shall consist of the adviser and at least two other faculty members representing the major areas of concentration in the student's program.

Comprehensive Examination. Each student will complete either an extensive master's project or a written comprehensive examination.

Students in Elementary Education must complete an action research project (EDUC 6991, Research Project in Elementary Education). The project is designed, carried out and evaluated under the direction of the student's Graduate Committee and may take the form of a thesis, a research study or a program development activity. The written comprehensive examination is prepared and evaluated by the student's Graduate Committee and is intended to determine the extent of the student's assimilation of his/her total program. Both the project and the written examination are followed by an oral examination wherein the student clarifies, expands upon and/or defends the written project report or examination. More information on the project or written examination may be obtained in the Department.

M.Ed. In Elementary Education. This program is designed for students seeking graduate teaching certification at the kindergarten through sixth grade levels.

Degree requirements include: EDUC 6100, 6101, 6221, 6241, 6474, 6991, and 665X; EDUC 6252 or MAED 5101; HUSV 6102; SPED 6254; and READ 6250 or 5270.

M.Ed. In Middle Grades Education. This program is designed for students seeking graduate teaching certification at the sixth through ninth grade levels. Degree requirements include nine hours of required *Core Courses*—EDUC 6100, 6101, and 6120 or 6109 or 6150; nine hours of *Professional Specialization*—EDUC 6220, 6225, 6473 which includes an internship experience; 12 hours in a *Content Field* (communication skills, mathematics, science, social studies); and six hours of electives. Inquiries about the program may be addressed to the Coordinator, Sharon Harris, Department of Curriculum and Instruction.

M.Ed. In Curriculum and Instruction (Secondary Education). This program is designed for students seeking graduate certification at the ninth through twelfth grade levels. The requirements are as follows: *Core Courses* (12 hours)—EDUC 6100, 6101, 6120, and 6475; *Electives* (six hours); and *Cognate electives from certification field* (18 hours).

CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

The Department of Curriculum and Instruction offers Certificate of Advanced Study (CAS) programs in Elementary Education (Early Childhood and Intermediate), Secondary Education (History, English and Mathematics), and Special Education.

General Requirements. The CAS programs involve a minimum of 36 semester hours of coursework including a supervised internship. At least half of each student's program must consist of advanced graduate courses. Students must also successfully complete a comprehensive review.

Residence Requirement. All coursework for the Certificate in Advanced Study programs must carry UNC Charlotte residence credit except that six semester hours of approved coursework may be accepted for transfer credit from another accredited institution. Of the coursework carrying UNCC residence credit, nine (9) semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester of one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

Certificate of Advanced Study in Elementary Education. This program is designed for students seeking advanced graduate skills in the areas of Early Childhood and Intermediate Education. The requirements for the program are as follows: ADMN 7250, EDUC 6110, 7610, HUSV 7135 and 7842. The student must select one course from the following (three hours): PSYC 4140, EDUC 6109 and 7110. Also, the student is to select one course from the following (three hours): READ 6250, EDUC 6150, 6250 and 6251. The student must select six semester hours from teaching field electives. Twelve semester hours must be selected from cognate areas of study or electives outside the College of Education and Allied Professions.

Certificate of Advanced Study in Secondary Education. This program is designed for students who are seeking advanced skills in the area of Secondary Education, concentrating in English, mathematics or history. The requirements for the program are as follows: ADMN 7250, EDUC 6110, 7623, 7420 or 7840 and 7220 or 7221. Students may choose three hours from the following to complete their professional education sequence (18 hours): SPED 6100, READ 6250, READ 5270, HUSV 7135 and EDUC 7622. Eighteen semester hours must be selected from a cognate area of study.

EDUCATION (EDUC) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

Following are courses primarily for advanced undergraduates which carry graduate credit. Additional work will be required of graduate students.

EDUC 4135. Audiovisual Communications. (3) (3G) Prerequisite: junior standing or departmental approval. An overview of traditional and emerging audiovisual media for education, training, marketing, and public relations. Emphasis on knowledge and skills for evaluating, designing, producing, and using media such as photography, television, displays, interactive video, and microcomputers to enhance communication. *(Fall, Spring, Summer)*

EDUC 4140. Educational Television. (3) (3G) Prerequisite: junior standing or departmental approval. An examination of traditional and emerging applications of telecommunications media for teaching, training and informing. Investigation of published research and current strategies for evaluating the social and educational impact of television. Students will evaluate, design, produce, and utilize telecommunications media in micro-teaching settings, for the enhancement of communication in their respective disciplines. *(Fall, Spring, Summer)*

EDUC 5000. Selected Topics in Education. (3-6) (3-6G) Prerequisite: EDUC 2150 and permission of the Department. Seminars, independent study and clinical experiences. May be repeated for credit as topics vary with departmental approval. *(Fall, Spring)*

Courses for Graduate Students Only

EDUC 6000. Topics in Education. (1-3G) Prerequisite: permission of Department. Examination of selected areas of interest in the education profession. May be repeated for credit as topics vary and with departmental approval. *(Fall, Spring)*

EDUC 6100. Theories of Human Development and Learning. (3G) Concept of development; philosophical antecedents of developmental and learning theories; role of theory in explaining human nature; components of theoretical explanations; evaluating theories. *(Fall, Spring)*

EDUC 6102. The Person and School in Urban Society. (3G) The basic philosophical theories and socio-cultural forces that influence the objectives, structure and programs of schools, agencies and institutions in urban society. *(On demand)*

EDUC 6120. Curriculum Theory. (3G) Study of theoretical constructs of curriculum and the nature of experience as they relate to facilitating theory into practice. Emphasis on research and experimentation in developing curriculum theory, processes, materials and relationships. *(Fall, Spring, Summer)*

EDUC 6121. Instructional Design. (3G) Prerequisites: completion of master's core—EDUC 6100 and 6101. Advanced instructional planning; systems development; task analysis; sequencing, delivery systems; summative and formative evaluation of instruction and student progress. *(Fall, Spring) (Evenings)*

EDUC 6122. Curriculum Development. (3G) Planning, development and evaluation of curricular programs. *(On demand)*

EDUC 6123. Strategies and Design in Human Development and Learning: Human Development. (3G) Examination of the process of program planning, development and evaluation for educators in nontraditional settings. *(On demand)*

EDUC 6135. Learning Media, Resources and Technology. (3G) Selection, use and evaluation of technological innovations in instructional media. *(Fall, Spring)*

EDUC 6150. Models of Teaching. (3G) Prerequisites: EDUC 6100, 6101 and 6120. Learning theory associated with information processing, personal, social, and behavioral models; current trends of instructional methodology for a variety of content areas. *(Spring)*

EDUC 6220. Adolescence and Learning. (3G) Study of adolescence as a phase of development and its relationship to the learning process. *(Fall) (Evenings)*

EDUC 6221. Teaching and Learning Science. (3G) Prerequisites: Core requirements. Current trends and issues in teaching and learning science with emphasis on contemporary literature and classroom implementation, grades K-6. Field experiences, teaching experiences are individualized. *(Spring)*

EDUC 6225. Topics and Issues in Middle Grades. (3G) Examination of educational practice in the middle grades (6-9) including trends and issues unique to the middle grades. Emphasis on broadening understanding of foundational components, organizational patterns, instructional programs and management techniques. *(Spring) (Evenings)*

EDUC 6241. Teaching and Learning Social Studies. (3G) Prerequisites: core requirements. Theory and research related to issues in social studies curriculum and instruction in grades K-6. *(Fall)*

EDUC 6250. Issues in Science Education. (3G) Orientation to content, curriculum and methods appropriate for teaching science in grades K-9. Emphasis is on a critical examination of current trends and practices in the teaching of science. *(Yearly) (Evenings)*

EDUC 6251. Teaching and Learning Mathematics. (3G) Prerequisites: core requirements. Examination of the K-6 mathematics curriculum, including a critical analysis of research literature related to problem solving processes and mathematics learning. *(Yearly) (Evenings)*

EDUC 6252. Diagnosing Mathematical Learning Problems. (3G) For teachers K-9. Assessment of student difficulties in learning mathematics. *(On demand) (Evenings)*

EDUC 6254. Issues in Social Studies Education. (3G) Current issues in teaching and learning social studies. Emphasis on current trends in curriculum, advanced instructional methods, and research for grades K-12. *(Yearly)*

EDUC 6470. Early Childhood Education Clinical Experience. (3G) Program of experiential learning activities in the student's level and/or area of academic concentration in an approved school setting (K-3). *(Fall)*

EDUC 6471. Intermediate Education Clinical Experience. (3G) Program of experimental learning activities in the student's level and/or area of academic concentration in an approved school setting (4-9). *(Spring)*

EDUC 6472. Secondary Education Clinical Experience. (3G) Program of experimental learning activities in the student's area of academic concentration in an approved secondary school setting. *(Fall, Spring) (Evenings)*

EDUC 6473. Middle Grades - Internship and Seminar. (3-6G) Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction in the middle grades classroom. *(Fall, Spring) (Evenings)*

EDUC 6474. Analysis of Teaching/Practicum in Elementary Education K-6. (3G) Prerequisites: core courses and permission of instructor. Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction of the elementary classroom. *(Fall, Spring) (Evenings)*

EDUC 6475. Secondary Internship and Seminar. (3-6G) Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction of the secondary classroom. *(Fall, Spring) (Evenings)*

EDUC 6476. Seminar and Internship in Human Development and Learning: Teaching. (3-6G) Prerequisite: departmental permission. Supervised experiences in public, private school or non-school teaching with emphasis on developing skills as an education professional. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

EDUC 6651. Piagetian Theory. (3G) Prerequisite: permission of the instructor. Advanced seminar for investigation of Piagetian theory with emphasis on genetic epistemology, research and neo-Piagetian concepts. *(On demand)*

EDUC 6800. Individual Study in Education. (1-6G) Prerequisite: permission of department. Designed to permit students to conduct research on selected topics, examine specific educational/human services literature and develop special projects under the direction of a faculty member. May be repeated for credit with departmental approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer) (Evenings)*

EDUC 6900. Project, Thesis or Comprehensive Examination. (0) Research plan or intention to take the final comprehensive written examination is arranged with the student's adviser and graduate committee. *(Fall, Spring)*

EDUC 6991. Research Project/Elementary Education K-6. (3G) Prerequisites: Core and specialization requirements. Students conduct an approved action research project of their own design and origination under the supervision of graduate faculty members. An acceptable report, written in APA style, is required for successful completion of the course. *Graded Pass/No Credit only.* May be repeated once for credit with approval of adviser and program coordinator. *(Fall, Spring)*

Courses for Advanced Graduate Students Only

EDUC 7121. Advanced Instructional Design and Evaluation. (3G) Advanced examination of learning theory-based instructional systems design models and procedures, norm and criterion referenced testing, instructional projects management, and instructional evaluation. The course will focus on school system level applications of instructional design and evaluation principles for the improvement of instruction. *(On demand)*

EDUC 7122. Advanced Curriculum Theory. (3G) An examination of philosophic thought and its relationship to educational theory which have led to assumptions for educational practices in American schools. *(On demand)*

EDUC 7126. Comparative Education. (3G) Analysis of sociocultural forces affecting educational planning and comparison of contemporary educational systems of selected countries and the United States. *(On demand)*

EDUC 7220. Current Issues in Secondary Education (3G) Study of problems currently affecting secondary schools with emphasis on the student's skills of problem identification, delineation and the development of alternative solutions and their consequences. *(On demand) (Evenings)*

EDUC 7221. Evaluation of Secondary Curriculum and Instruction. (3G) Examination of criteria and procedures for evaluating curricula and the instructional effectiveness of secondary classroom teachers. *(On demand) (Evenings)*

EDUC 7420. Internship: Peer Leadership in the Secondary School. (3G) Supervised clinical activity to develop and assess the student's ability to exert leadership among the staff of a secondary school to solve a specified problem. *(On demand) (Evenings)*

EDUC 7610. Reading in Research in Elementary Education. (3G) Seminar for in-depth examination of research literature in early childhood or intermediate education. *(Yearly) (Evenings)*

EDUC 7622. Analysis of Secondary Teaching. (3G) Seminar on the systematic observation and analysis of instructional activities of teachers in secondary classrooms including classroom atmosphere, verbal and nonverbal communication, structuring of learning tasks. *(On demand) (Evenings)*

EDUC 7623. Applied Research Seminar in Secondary Education. (3G) Design, implementation and dissemination of "action research" in a secondary education setting. *(On demand) (Evenings)*

EDUC 7840. Individual Project in Secondary Education. (3G) In consultation with a faculty adviser, the student will identify and solve a problem in secondary education. *(On demand) (Evenings)*

EDUC 7842. Individual Project in Elementary Education. (3G) In consultation with a faculty adviser, the student will identify and solve a problem in a specific area of elementary education. *(On demand) (Evenings)*

Department of Educational Administration

Degrees: M.Ed., Ed.D.; doctoral studies in cooperation with UNC-Chapel Hill
Certificate: C.A.S.

Chairperson: Professor Lyons; *Professor Emeritus:* Fretwell; *Professors:* Hackney, Pittillo, Smith; *Associate Professor:* Pleasants; *Assistant Professor:* Gwaltney

The primary mission of the Department of Educational Administration is to prepare students to assume leadership roles in organizations in general and in educational organizations in particular. The Department of Educational Administration offers the Master of Education (M.Ed.) and the Doctor of Education (Ed.D.) degrees and the Certificate of Advanced Study (CAS) with a concentration in Educational Administration or Curriculum and Instruction (Supervision). Students are awarded the master's or doctoral degrees or the Certificate of Advanced Study and the appropriate graduate level certification upon completion of the specified requirements. The Department also offers programs of study for students who wish to add graduate (fifth year) or Certificate of Advanced Study (sixth year) certification in Educational Administration or Curriculum and Instruction (Supervision). The department offers the Doctor of Education (Ed.D.) degree in Educational Leadership. An interinstitutional doctoral program (Ed.D.) is also offered in conjunction with The University of North Carolina at Chapel Hill. This interinstitutional program is intended to serve the needs of practicing public school administrators in the southern Piedmont region of North Carolina.

MASTER OF EDUCATION DEGREE

The Department offers the Master of Education (M.Ed.) degree with a concentration in Educational Administration or Curriculum and Instruction (Supervision).

Degree Requirements. The candidate for the M.Ed. degree must successfully complete a minimum of 36 semester hours of work in courses approved for graduate credit including at least 18 hours in courses which are open to graduate students only. In addition, all students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these are completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of coursework concerning procedures and preparation for options.

Approval of Individual Programs. Approval of each student's program will be the responsibility of an adviser. The student will also need a graduate committee for consultation and evaluation. The committee shall consist of the adviser and at least two other faculty members representing the major areas of concentration which are significant to the student's program.

Comprehensive Examination. Each student will complete either an extensive master's project or a written comprehensive examination. The project is designed, carried out and evaluated under the direction of the student's Graduate Committee and may take the form of a thesis, a research study or a program development activity. The written comprehensive examination is prepared and evaluated based on the student's assimilation of his/her total program. Both the project and the written examination are followed by an oral examination, wherein the student clarifies, expands upon and/or defends the written project report or examination.

M.Ed. Degree in Educational Administration. The program is designed for those seeking Level I Administration Certification (Principal's Certificate). The required courses are: EDUC 6100, 6101, and 6120 and ADMN 6160, 6161, 6165, 6166, and 6490. In addition to these courses, a student must select two electives from within the College of Education and Allied Professions and two courses from a cognate area such as management, political science, or sociology.

M.Ed. Degree in Curriculum and Instruction. The master's degree in Curriculum and Instruction which qualifies one for the Supervisor's Certificate (Level I) has two tracks: Generalist and Specialist. Students in both tracks complete 21 semester hours of required courses: EDUC 6100, 6101 and 6120 and ADMN 6121, 6125, 6165, and 6491. Students in the **Generalist Track** must take 15 semester hours from restricted electives in the College of Education and Allied Professions selected

from Administration and Supervision, Curriculum and Instruction and other appropriate program areas. Students in the **Specialist Track** complete 15-18 semester hours in a special subject area in the College of Arts and Sciences, such as English, history, or mathematics. The **Instructional Technology Specialist—Computers** program requires CSCI 5000 (Advanced Pascal Programming), MAED 5000 (Programming in BASIC and LOGO) and nine hours selected from MBAD 6121 and EDUC 5120, 6135 and 6000A (Microcomputer Software Authoring).

CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

The Department offers Certificate of Advanced Study (CAS) programs in Curriculum and Instruction (Supervision) and Educational Administration. Upon completion of the program, the student is eligible to receive Level II certification in Curriculum and Instruction or Level II certification in Educational Administration.

General Requirements. The CAS programs involve a minimum of 36 semester hours of coursework including a supervised internship. At least half of each student's program must consist of advanced graduate courses. Students must also successfully complete a comprehensive review.

All coursework for the Certificate of Advanced Study programs must carry UNC Charlotte residence credit. Six semester hours of approved coursework may be accepted for transfer credit from another accredited institution. Of the coursework carrying UNCC residence credit, nine (9) semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester for one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

Certificate of Advanced Study in Curriculum and Instruction (Supervision). This program is designed for students in or seeking leadership positions as supervisors in public or private schools. The requirements of the program are as follows: EDUC 6110 and ADMN 6166, 7250, 7695, 7196, 7197, and 7191. The remaining 15 semester hours must come from restricted electives in the College of Education and Allied Professions and/or from cognate areas of study.

Certificate of Advanced Study in Educational Administration. This program is designed for students in or seeking leadership positions in public or private school administration. The requirements for the program are as follows: EDUC 6110 and ADMN 7250, 7190, 7191, 7192, 7490.

The following are restricted electives from which the student must select two courses: ADMN 7103, 7194, 7196, and 7697. Two courses also must be selected from a cognate area of study such as management, political science or sociology.

DOCTOR OF EDUCATION DEGREE

The doctoral program in Educational Leadership prepares students to assume middle and senior level administrative positions in K-12 educational settings. The program is designed especially to serve those students who hold or aspire to hold leadership positions in public schools.

Degree Requirements. The Ed.D. degree program requires a minimum of 69 semester hours of coursework open only to graduate students, including 30 semester hours of core courses and 12 semester hours of related studies.

Additional requirements include one year of full-time, in-residence study; successful completion of a comprehensive examination upon completion of all core, minor and research studies; and successful preparation and defense of a dissertation on a significant problem or issue within the framework of educational leadership and/or administration.

Internship. The doctoral program requires that students complete a highly structured and carefully supervised internship in a K-12 educational setting. The internship experience is structured to bridge the relationship between coursework and the practice of educational leadership. Under the supervision of full-time faculty members and carefully selected practicing school administrators, students will be expected to make application of the principles, knowledge and leadership skills acquired in the program.

Transfer Credit. A student may transfer up to 18 credit hours of study with the approval of the academic adviser, doctoral program committee and the Dean of the Graduate School. Transfer credit may be approved only if the courses taken have been completed within six years prior to admission to the program; the student earned a grade of *B* or better in the course; and the courses taken are equivalent to courses offered in the doctoral program at UNC Charlotte. Not more than six hours credit will be accepted for transfer in any one area of the program (core requirements, research and related studies).

Required Courses

Core		**Sem. Hours**
ADMN 8250	Educ. Governance and Policy Standards	3
ADMN 8160	Organizational Theory and Behavior in Education	3
ADMN 8166	Educational Leadership and Management	3
EDUC 7122	Advanced Curriculum Theory	3
EDUC 7121	Advanced Instructional Design and Evaluation	3
ADMN 8695	Professional Leadership Seminar	6
	A. School Finance	
	B. School Law	
	C. Administrative Technology Practices	
	D. Personnel Development Issues	
SPED 7112	Issues in Special Education	3
ADMN 8692	Interdisciplinary Seminar	6
		30

Research

RSCH 6110	Descriptive and Inferential Statistics	3
RSCH 7110	Applied Research Methods	3
RSCH 7120	Multivariate Statistics	3
ADMN 7196	Program Evaluation	3
GEOG 7622	Seminar in Applied Population Analysis	3
ADMN 8699	Dissertation Proposal Seminar	3
		15-18

Related Studies

Select from *one* of the following areas: 12

Human Resources Development
Organizational Behavior and Management Practices
Pluralism and American Culture
Urban Systems for School Administrators
Other Possible Areas Include:
- Public Administration
- Sociology
- Liberal Studies
- Psychology

Internship and Seminar

ADMN 8490	Internship and Seminar	6

Dissertation

ADMN 8999	Dissertation Research	6
	Total Hours	69-72

EDUCATIONAL ADMINISTRATION (ADMN) COURSE DESCRIPTIONS

ADMN 6121. Strategies and Designs in Curriculum Development. (3G) Examination of principles and practices for educational leaders in program design, implementation and evaluation. *(Fall)*

ADMN 6125. Advanced Instructional Techniques. (3G) Analysis of models of teaching and the match between attributes of the models and the instructional outcomes desired by the teacher. *(Spring, Summer)*

ADMN 6160. Introduction to Educational Administration. (3G) Examination of behavioral components of administrative theory, organization, decision-making and planning for educational development including appraisal of significant functions, techniques, practices and problems as they relate to public school systems, social institutions, and the system of social and governmental agencies. *(Fall, Spring, Summer)*

ADMN 6161. The Principalship. (3G) Examination of school administration focusing on the role, task and responsibilities associated with the principalship with special attention to the conceptual, human and technical skills associated with the principalship. *(Fall, Summer)*

ADMN 6165. Supervision of Instruction. (3G) Examination of the fundamentals in the areas of clinical supervision, in-service education and leadership in curriculum development. *(Fall, Spring, Summer)*

ADMN 6166. Educational Leadership. (3G) Examination of leadership in formal organizations and social and behavioral science research concerning leadership ability with emphasis on educational organizations and the role of the leader in the accomplishment of organizational goals. *(Spring, Summer)*

ADMN 6490. Internship and Seminar: Administration. (3-6G) Prerequisite: Department approval. Internship under the supervision of University and on-site personnel in a setting consistent with the student's professional goals in which the student will be involved in the diverse activities expected of the professional administrator. Seminars are held concurrently. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

ADMN 6491. Internship and Seminar: Supervision. (3-6G) Prerequisite: Department approval. Internship under the supervision of University and on-site personnel in a setting consistent with the student's professional goals in which the student will be involved in the diverse activities expected of the curriculum-instructional specialist. Seminars are held concurrently. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

ADMN 6601. Seminar in Administration and Supervision. (1-3G) Prerequisite: permission of the Department. Examination of selected areas of interest in educational administration and supervision. May be repeated for credit with departmental approval. *(On demand)*

ADMN 6800. Independent Study. (1-3G) Prerequisite: permission of the Department. Examination of selected areas of interest in educational administration and supervision under the direction of a faculty member. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

ADMN 6909. Project/Thesis/Comprehensive Registration. (0G) Prerequisite: permission of graduate adviser. The student must register for ADMN 6909 during the term in which he/she expects to take the comprehensive examination. Offered on a *Pass/No Credit* basis.

Courses for Advanced Graduate Students Only

ADMN 7190. Public School Administration. (3G) Examination of theory and practice of public school administration including the roles of school boards, superintendents, central office administrators and other members of the leadership team at the district-wide level with emphasis on the role of the superintendent. *(Spring)*

ADMN 7191. School Law. (3G) Examination of the legal aspects of school administration with special attention to case law and statutory provisions relevant to educational administration including examination of some court decisions that have influenced policies and practices in the schools. *(Spring)*

ADMN 7192. School Finance and Business Administration. (3G) Examination of the theory and operation of school finance systems and school business administration with special attention to local, state and federal sources of school revenue and such business functions as budgeting and financing capital outlay projects. *(Fall, Summer)*

ADMN 7193. School Personnel Administration. (3G) Examination of personnel administration in educational institutions with special attention to those functions and responsibilities related to the administration of personnel at the school district level including the contribution of the personnel function to the overall management and operation of a school system. *(Spring)*

ADMN 7194. Planning School Facilities. (3G) Examination of practices, principles and procedures related to educational facility planning including an overview of the major steps involved in planning educational facilities and the roles of all participants in a building program with special emphasis on the roles of the superintendent and board of education. *(Summer)*

ADMN 7196. Program Evaluation. (3G) Examination of strategies and techniques of program evaluation with emphasis on the mastery of skills for utilization of selected procedures for analyzing teaching/learning processes. *(Spring)*

ADMN 7250. Educational Policy Studies: Trends, Issues, and Problems. (3G) Examination of educational issues, trends, problems, proposals, policies, and practices within historical, social, economic, political, and philosophical contexts. *(Fall, Spring, Summer)*

ADMN 7489. Practicum in Staff Development. (3G) Examination of techniques of delivering in-service training and development of leadership for in-service educational programs including design and implementation of a staff development program in a school setting. *(On demand)*

ADMN 7490. Culminating Experience-Administration. (3-6G) Demonstration of appropriate leadership abilities in a field setting. Required for school administrators. May be repeated for credit. *(Fall, Spring, Summer)*

ADMN 7491. Culminating Experience-Supervision. (3-6G) Demonstration of appropriate leadership skills in a field setting. Required for curriculum and instruction specialists. May be repeated for credit. *(Fall, Spring, Summer)*

ADMN 7601. Seminar in Administration and Supervision. (1-3G) Prerequisite: permission of the Department. Examination of selected areas of educational administration and supervision. May be repeated for credit with departmental approval. *(On demand)*

ADMN 7695. Advanced Seminar in Teaching and Learning. (3G) Examination of a number of current teaching models to provide a framework for choosing those appropriate for a given classroom setting with special attention to the relationship between teaching strategies and learning outcomes. *(Fall)*

ADMN 7697. Advanced Seminar in Supervision. (3G) Investigation and evaluation of current trends and issues in supervision as they relate to the role of the curriculum and instructional specialist with special attenton to the role of the instructional specialist in facilitating the teaching/learning process. *(Spring)*

ADMN 7800. Independent Study. (1-3G) Prerequisite: permission of the Department. Research on special projects under the direction of a faculty member. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

Courses for Students in the Doctoral Program Only

ADMN 8160. Organizational Theory and Behavior in Education. (3G) Examines the structure, function and administrative foundations of formal organizations and the behavior of groups and individuals within them; emphasis on organizational theory and behavior in educational organizations as they relate to administration. *(Spring)*

ADMN 8166. Educational Leadership and Management. (3G) The leadership role and expectations in organizations with emphasis on educational organizations. Examination of leadership responsibilities, organizational purpose, mission, goals and priorities, and management functions. *(Fall)*

ADMN 8250. Educational Governance and Policy Studies. (3G) Examines the institutional structure for policy making in American education and the theories, models and practices that relate to policy making in education. Emphasis on groups, organizations and political bodies which participate regularly in educational policy making. *(Fall)*

ADMN 8490. Internship and Seminar. (6G) An internship of two major components to be completed over a one year period: (1) teams of students conduct a major study in a school district in which they are not employed and (2) students serve in a leadership position in established K-12 educational settings under the close supervision of full-time faculty members and carefully selected pracitioners. Concurrent seminars for students involved in internships. *(Fall, Spring)*

ADMN 8692. Interdisciplinary Seminars. (1G) Readings and discussions of ideas, values and concepts to provide enrichment and cohesion to the Educational Leadership core program. Students register for this seminar each semester for at least six semesters. *(Fall, Spring)*

ADMN 8695. Professional Leadership Seminar. (6G) Seminar on current issues, trends and practices that impact upon schools, their programs, school personnel, and administrative technology. Instructional modules include: School Finance, School Law, Administrative Technology, and Personnel Development. Students register for two semesters of this seminar. *(Spring, Summer, Fall)*

ADMN 8699. Dissertation Proposal Research Seminar. (3G) Identification and definition of a research area and development of a draft proposal for an original research study appropriate for the dissertation requirement. *(Spring, Summer)*

ADMN 8999. Dissertation Research. (1-6G) An original research study that addresses the solution to an educational or school related problem or that addresses a substantive educational leadership or programmatic issue. *(Fall, Spring, Summer)*

EDUCATION

Health Education

Degree: M.Ed. *Coordinator:* Harvey Murphy

HEALTH EDUCATION GRADUATE TRACK: MASTER OF EDUCATION DEGREE IN CURRICULUM AND INSTRUCTION

The central focus of the curriculum is the enhancement of the abilities of health educators to provide knowledge, skills and strategies which will enable their students and clients to actively seek optimal health. The program includes two tracks: school health or health promotion. The school health track focuses on the needs of students in grades K-12. Graduate Teaching Certification in Health Education will be awarded to those who successfully complete the school health track and other teaching certification requirements. The health promotion track addresses the needs of non-school populations and is especially pertinent to business and industry, health fitness agencies and commercial ventures in health fitness/health promotion.

REQUIREMENTS FOR THE HEALTH EDUCATION GRADUATE TRACK

The candidate for the Master of Education degree must successfully complete a minimum of 36 semester hours in courses approved for graduate credit including the following required core courses: HLED 6120, 6122, 6124, 6471, and RSCH 6101.

Additional requirements for the *school health track* are HLED 6125, 6128, 6132, and EDUC 6120. Recommended school health electives are HLED 6134 and 6136.

Additional requirements for the *health promotion track* are HLED 6126, 6141, 6153 and 6155. Recommended health promotion electives are HLED 6128 and 6134.

Health Education electives approved by the adviser may be substituted for up to two required HLED courses if analysis of the student's transcript and Health Knowledge Test score demonstrates competence in the knowledge and skills for which the courses were designed. The entry Health Knowledge test is used for advisement and curriculum evaluation only. Electives needed to complete the 36 semester hour requirement may be selected in consultation with the student's adviser from other HLED courses or from courses offered elsewhere in the University.

Admission to Candidacy in the Health Education Program. The academic requirements for admission to The University and to the College of Education and Allied Professions graduate pro-

grams which are described under *"Requirements for Graduate Admission"* apply to admission to the Health Education Program. The Department prefers letters of recommendation from academic sources.

HEALTH EDUCATION (HLED) COURSE DESCRIPTIONS

HLED 6120. Philosophy and Practice in Health Education. (3G) Philosophy, development, delivery, ethics and evaluation of health promotion in schools and alternative settings. *Note:* HLED 6120 is a prerequisite or corequisite to all other courses in the Health Education Master's Program for degree candidates. When HLED 6120 is not offered during a summer session, enrollment in HLED 6120 may be delayed until the fall semester of the same year. *(Spring, Fall)*

HLED 6122. Applied Nutrition for Today's Consumer. (3G) Principles of nutrition, dietary guidelines, dietary relationships to diseases and health, special populations, computerized dietary analysis. *(Fall, Spring)*

HLED 6124. Responsible Drug Use in Contemporary Culture. (3G) Teaching methodology, knowledge and skills for affecting appropriate health behaviors through the study of the exploration of use, misuse and abuse of natural and synthetic chemicals in today's society. *(On demand)*

HLED 6125. Coordinating the School Health Education Program. (3G) Prerequisite: Consent of the instructor. An examination of the roles and relationships of those involved with the enhancement and leadership of school based health programs. *(Alternate years)*

HLED 6126. Assessment and Development of Physical Fitness. (3G) Prerequisite: consent of the instructor. Study of responses and adaptations to exercise, assessment techniques, exercise prescription, programming and leadership. *(Alternate years)*

HLED 6128. Mental and Emotional Well-being. (3G) Examines mental and emotional health from the perspective of the health educator's role as a facilitator of mental and emotional wellness. *(Spring, Summer)*

HLED 6132. Adolescent Sexuality and Family Life Education. (3G) Designed for teachers, counselors, school nurses, administrators and others responsible for family life education programs in school, with focus on adolescent sexuality issues. *(Fall, Sumer)*

HLED 6134. Environmental Influence on Health: A Global Perspective. (3G) Teaching methodology, knowledge and skills for affecting appropriate health behaviors through study of the causes and effects of contemporary environmental problems. *(On demand)*

HLED 6136. Health Product and Service Consumerism. (3G) Teaching methodology, knowledge and skills for affecting appropriate health behaviors through emphasis on the individual consumer at the health marketplace. *(On demand)*

HLED 6141. Management and Leadership in Health Fitness Settings. (3G) Prerequisite: consent of the instructor. Management and leadership knowledge and skills that will assist the health fitness professional in negotiating, communicating and working in business, industry and other corporately-managed settings. *(Alternate years)*

HLED 6153. Health Promotion. (3G) Prerequisite: consent of the instructor. An exploration of the practices of promoting health in various settings for a variety of consumers. *(Alternate years)*

HLED 6155. Health Risk Reduction and Disease Prevention. (3G) Personal/professional management of risk factors and lifestyle intervention processes for leading causes of mortality and morbidity. *(Spring, Summer)*

HLED 6471. Seminar and Internship in Health Education. (1-6G) Prerequisites: completion of 12 or more graduate credit hours in health education and permission of the health education program coordinator. Supervised practice in health education. May be repeated for a different seminar and internship. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

HLED 6899. Problems and Topics in Health. (3G) Topics and special problems related to ideas, practices or significant trends in health education. Seminars and independent studies. *(Fall, Spring, Summer)*

PHYSICAL EDUCATION (PHED) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. Additional work will be required of graduate students. See page 237 for complete course descriptions.

PHED 4204. Perceptual Motor Development. (3) (3G)

PHED 4205. Perceptual Motor Learning. (3) (3G)

PHED 4208. Perceptual Motor Therapy. (3) (3G)

PHED 4210. Perceptual Motor Therapy Laboratory. (1) (1G)

PHED 4211. Perceptual Motor Therapy Laboratory. (2) (2G)

PHED 4212. Perceptual Motor Therapy Laboratory. (3) (3G)

EDUCATION

Teaching Specialties

Degree: M.Ed. *Chairperson:* Terry L. Rose

MASTER OF EDUCATION DEGREE

The Department of Teaching Specialties offers M.Ed. programs for students seeking teaching certification in Special Education, English as a Second Language, and Reading Education.

Degree Requirements. The candidate for the Master of Education degree must successfully complete a minimum of 36 or 39 semester hours of work in courses approved for graduate credit including at least 18 hours in courses which are open to graduate students only.

In addition, all students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these would be completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of course work concerning procedures and preparation for either option.

Approval of Individual Programs. Approval of each student's program will be the responsibility of an adviser. The student also will have a graduate committee for consultation and evaluation. The committee shall consist of the adviser and at least two other faculty members representing the major areas of concentration in the student's program.

Comprehensive Examination. Each student will complete either an extensive master's project or a written comprehensive examination. The project is designed, carried out and evaluated under the direction of the student's Graduate Committee and may take the form of a thesis, a research study or a program development activity. The written comprehensive examination is prepared and evaluated by the student's Graduate Committee and is intended to determine the extent of the student's assimilation of his/her total program. Both the project and the written examination are followed by an oral examination wherein the student clarifies, expands upon and/or defends the written project report or examination. More information on the project or written examination may be obtained in the Department.

M.Ed. In Teaching English as a Second Language. This program is designed to train both TESL specialists and regular classroom teachers seeking additional expertise in TESL at the elementary and secondary levels. Program graduates will be eligible for the "G" certificate in TESL (K-12) if they already have an "A" teaching certificate and minimum proficiency in a foreign language. Course requirements for both these students and students not seeking the "G" certificate in TESL include *Part I. Foundations* (12 hours)—EDUC 6100, ENGL 6161 and 4263, and one course from the following: ENGL 4165, ANTH 4120 or 4090; *Part II. Curriculum* (9 hours)—ENGL 4166, TESL 5101 and 6120; *Part III.* Specialization (12 hours)—READ 6250, RSCH 6101, TESL 5103 and 6470; and *Part IV. Internship* (3 hours)—TESL 6476.

M.Ed. In Reading Education. This program is designed to prepare reading or instructional specialists, regular classroom teachers seeking additional expertise in reading at the elementary and

secondary levels. Program graduates will be eligible for the "G" certificate in Reading, K-12. Course requirements include *Part I. Foundations* (nine hours)—EDUC 6100, RSCH 6101 and READ 6250; *Part II. Curriculum* (six hours)—EDUC 6120 and READ 5250 or 5270; *Part III. Specialization* (15 hours)—READ 5260, 6260 and 6480, ENGL 6109 or PSYC 4140; Thematic Electives (6 hours).

M.Ed. In Special Education. This program is designed for students seeking graduate certification in Special Education (mental handicaps, learning disabilities, emotional handicaps, academically gifted and cross-categorical. The requirements are as follows: EDUC 6100; RSCH 6101 and 6109; SPED 5130, 6100, 612X, 611X, 6130, 647X (X depends on certification track); and electives (six hours). Requirements for the academically gifted program are similar.

M.Ed. in Special Education: Severely and Profoundly Handicapped Track. The Severely and Profoundly Handicapped track requires 36 semester hours of coursework including EDUC 6100 and RSCH 6101; CSLG 6200; and SPED 5130, 6116, 6117, 6126, 6127, 6474 and 6630.

Interinstitutional Master's Program. The College collaborates with Appalachian State University to offer the Master of Arts in Higher Education, Adult Education track (M.A.). The degree is conferred by Appalachian State University.

CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

The Department of Teaching Specialties offers Certificate of Advanced Study (CAS) programs in Special Education.

General Requirements. The CAS program involves a minimum of 33 semester hours of coursework including a supervised internship. At least half of each student's program must consist of advanced graduate courses. Students must also successfully complete a comprehensive review.

Residence Requirement. All coursework for the Certificate in Advanced Study programs must carry UNC Charlotte residence credit except that six semester hours of approved coursework may be accepted for transfer credit from another accredited institution. Of the coursework carrying UNCC residence credit, nine (9) semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester of one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

Certificate of Advanced Study in Special Education. This program is designed to prepare students to be specialists in special education curriculum, research and development, technical assistance, and instruction and to assume leadership positions in special education. The requirements of the program are RSCH 6110 and 7110, and SPED 7110, 7611, 7112, 7113 and 7471. The student must complete an individual project and select approved electives from the departments of Curriculum and Instruction, Health and Physical Education, Educational Administration, Human Services, Psychology, or Sociology and Anthropology.

ADULT EDUCATION (ADED) COURSE DESCRIPTIONS

ADED 6140. Introduction to Adult and Continuing Education. (3G) Overview of the field of adult and continuing education including the nature, growth and historical development of adult education, its problems and possible solutions. Emphasis on philosophy and objectives, major figures and historical movements, possible careers and an international perspective. *(Fall)*

ADED 6141. Adult Learners and Adult Learning. (3G) Examination of characteristics of adult learners and adult learning with attention to factors that affect learning ability, motivation and achievement; and also determine appropriate responses of adult educators, educational institutions and other agencies. *(Spring)*

ADED 6143. Planning, Conducting and Evaluating Adult Programs. (3G) Field-centered investigation of adult education programs conducted by various organizations, agencies and groups as a primary, supplemental or complementary function. Emphasis on the theoretical foundations upon which the programming process is predicated; developing a theoretical model and acquiring the conceptual tools necessary for analyzing the programming process; and on conducting effective evaluations in any adult education organization. *(Fall)*

ADED 6144. Methods and Techniques for Adult Learners. (3G) Analysis of methods and techniques available for working with adults and their applicability in a variety of circumstances. Group participation in the various methods and techniques will be required. *(Spring)*

ADED 6476. Seminar and Internship in Adult Education. (3G) Prerequisite: permission of Department. Supervised experiences in school or non-school teaching or training with an emphasis on developing skills as an educational professional. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

READING (READ) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

READ 5250. Reading in the Content Areas. (W) (3) (3G) Prerequisite: EDUC 2110. Theories, research, problems and instructional methods associated with reading in the content areas of the middle grades and secondary school curriculum. *(Fall, Spring, Summer) (Evenings)*

READ 5260. Relationship Between Writing and Reading K-12. (3) (3G) Theories, research and instructional methods pertaining to related developmental processes of reading and writing from pre-school through high school. *(Spring) (Evenings)*

READ 5270. Trends and Issues in Reading/Language Arts. (1-3) (1-3G) Theories, research and instructional methods associated with reading and the language arts, pre-school through high school; questions of effectiveness related to instructional approaches and materials; related topics such as dialect, testing and literacy. *(Fall) (Evenings)*

Courses for Graduate Students Only

READ 6250. Language Development and Reading. (3G) Theories, research, instructional approaches and materials, and evaluation strategies pertaining to the relationship between the development of language competence and performance and the development of reading abilities and interest. *(Fall, Summer) (Evenings)*

READ 6260. Diagnostic Instruction in Reading. (3G) Prerequisite: READ 6250 or permission of instructor. Examination, use, and critique of theories and research about reading processes and problems; diagnostic approaches and techniques; instructional strategies to improve reading proficiency. *(Spring, Summer) (Evenings)*

READ 6470. Practicum in Reading Instruction. (3G) Prerequisite: READ 6260 or permission of instructor. Application and evaluation of instructional approaches in reading; working with students and colleagues in planning, implementing, observing and evaluating instruction. *(Fall) (Evenings)*

READ 6480. Coordination of Reading Programs. (3G) Prerequisites: completion of graduate reading course sequence and permission of instructor. Assumption and evaluation of the role of the reading teacher who assists school staff members in assessing, planning, implementing, and evaluating the total school reading program. Offered only on a *Pass/No Credit* basis. *(Spring) (Evenings)*

RESEARCH (RSCH) COURSE DESCRIPTIONS

RSCH 6101. Educational Research Methods. (3G) Empirical, logical and conceptual research problems; methods and procedures of research; interpreting research; writing reviews of related literature; library research. *(Fall, Spring, Summer) (Evenings)*

RSCH 6109. Assessment and Evaluation Methods. (3G) Assessment of performance and ability through the selection, administration and interpretation of standardized and criterion-referenced assessment instruments and to master other competencies prescribed by the State of North Carolina. *(Fall, Spring, Summer) (Evenings)*

RSCH 6110. Descriptive and inferential Statistics in Education. (3G) Prerequisite: RSCH 6101 or equivalent. Objective decision-making in research; inferential methods; elementary parametric and non-parametric techniques in hypothesis testing, data processing through University computer facilities. *(Fall, Spring, Summer) (Evenings)*

RSCH 7110. Applied Research. (3G) Development and implementation of proposals for research; use of designs for research and statistical procedures as required by research plans of graduate students. *(Fall) (Evenings)*

RSCH 7120. Multivariate Analytic Methods. (3G) Prerequisite: RSCH 6110 or equivalent. Multiple regression; factor analysis applied to descriptive, correlational and experimental research. *(On demand)*

SPECIAL EDUCATION (SPED) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergradautes

SPED 5130. Classroom Management. (3) (3G) Prerequisite: SPED 3160 or graduate standing. Theoretical context and related applied strategies necessary to effectively manage the classroom behaviors of individuals or groups of students. Additional work required for graduate credit. *(Fall, Spring) (Evenings)*

Courses for Graduate Students Only

SPED 6100. Introduction to Special Education. (3G) Examination of the historical antecedents of contemporary practices in the field of special education with emphasis on the conceptual models of child variance and current trends in the field of education. *(Fall, Spring, Summer) (Evenings)*

SPED 6105. Physiological Aspects of Learning. (3G) Examination of theories of learning as they relate to the structure and physiology of the central nervous system with emphasis on developmental abnormalities and disease processes that affect learning in children and youth. *(On demand)*

SPED 6111. The Gifted and Talented. (3G) Examination of the historical and philosophical perspectives of education for gifted and talented learners with emphasis on identification procedures, creativity, laws/policies, and current research in the field of giftedness. *(Summer)*

SPED 6112. Learning Disabilities. (3G) Examination of learning disabilities with emphasis on theories, issues, current trends and definitions of learning disabilities as well as instructional strategies, program models and major contributions to the field. *(Fall, Summer) (Evening)*

SPED 6113. Mental Handicaps. (3G) Examination of historical antecedents, major contributors, current practices, issues and trends in the field of mental retardation. *(Spring) (Evenings)*

SPED 6114. Emotional Handicaps. (3G) Examination of the conceptual models of emotional disturbance with emphasis on operational models and current practices based on the constructs of the models. Consideration of administrative arrangements for programs for children with emotional behavior. *(Spring) (Evenings)*

SPED 6115. Mild Handicapping Conditions. (3G) Examination of theories and practice of cross-categorical programming, with emphasis on theories, issues, current trends, current practices, and consultation practices. *(Fall) (Evenings)*

SPED 6116. Career and Vocational Techniques. (3G) Methods and procedures used in preparing handicapped people for the world of work. Prevocational work study and post-school programs leading to or approaching adult independence are studied. *(Fall) (Evenings)*

SPED 6117. Introduction to Severely/Profoundly Handicapped Persons. (3G) Social and cultural antecedents to contemporary services for severely/profoundly handicapped persons. Examination of historical events that lead to social attitudes, academic theories, and operational definitions. Study of general and characteristic behavior, nature and needs of these individuals within a developmental framework. Current issues are examined as current research is discussed. *(Fall) (Evenings)*

SPED 6121. Methods and Materials: Mental Handicaps. (3G) Examination of the principles and practices of curriculum development and modification and current instructional methodologies for the mentally handicapped learner. *(Fall) (Evenings)*

SPED 6122. Methods and Materials: Emotional Handicaps. (3G) Planning, implementation and evaluation of special education classrooms with emphasis on curriculum models, behavioral and academic strategies and individualized instruction for emotionally handicapped learners. *(Fall) (Evenings)*

SPED 5123. Methods and Materials: Learning Disabilities. (3G) Planning, implementation, and evaluation of instructional programs with emphasis on individual instruction, grouping for instruction, consultation, assessment, and program planning for the learning disabled. *(Spring) (Evenings)*

SPED 6124. Methods of Instruction for the Gifted. (3G) Prerequisites: SPED 6111, RSCH 6109. A course designed to provide the skills necessary to plan, implement, and evaluate instructional procedures that facilitate learning by gifted students. *(Fall) (Evenings)*

SPED 6125. Instructional Practices: Cross-categorical. (3G) Prerequisites: SPED 6100, RSCH 6109. Assessment procedures appropriate for use with the mildly handicapped. Assessment information will be used to plan for the most appropriate instruction for the mildly handicapped receiving education in a cross-categorical setting. *(Spring) (Evenings)*

SPED 6126. Methods for Teaching Severely Handicapped Students. (3G) Corequisite: SPED 6127. Presentation and evaluation of principles and procedures used to program instruction for the severely handicapped. Students are required to design and implement an instructional program with a severely handicapped person. *(Spring) (Evenings)*

SPED 6127. Curriculum for Severely Handicapped Students. (3G) Corequisite: SPED 6126. Selection of instructional programs appropriate for use with the severely handicapped. The student identifies strengths and weaknesses of educational programs and makes recommendations for their use with severely handicapped persons. *(Spring) (Evenings)*

SPED 6130. Diagnostic Instruction. (3G) Prerequisite: SPED 5130. Principles and practice of educational problem solving with emphasis on formal and informal assessment, observation and interviewing strategies for special educators. *(Fall, Spring) (Evenings)*

SPED 6471. Internship: Gifted and Talented. (3-6G) Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with gifted and talented students. Offered only on a *Pass/No Credit* basis. *(Spring) (Evenings)*

SPED 6472. Internship: Learning Disabilities. (3-6G) Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with learning disabled. Offered only on a *Pass/No Credit* basis. *(Fall, Spring) (Evenings)*

SPED 6473. Internship: Emotional Handicaps. (3-6G) Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with emotionally handicapped students. Offered only on a *Pass/No Credit* basis. *(Fall, Spring) (Evenings)*

SPED 6474. Internship: Mental Handicaps. (3-6G) Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with mentally handicapped students. Offered only on a *Pass/No Credit* basis. *(Fall, Spring) (Evenings)*

SPED 6475. Internship: Mild Handicaps. (3-6G) Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with special needs students. Offered only on a *Pass/No Credit* basis. *(Fall, Spring) (Evenings)*

SPED 6630. Problems and Issues of Severely Handicapped Students. (3G) An in-depth study of significant issues, trends and practices in the education of severely handicapped persons which master teachers and supervisors may encounter with this population. Current trends and issues. *(Fall) (Evenings)*

SPED 6640. Seminar in Special Education. (3G) Examination of current issues and trends related to special education program planning and instruction. *(Fall, Spring) (Evenings)*

SPED 6641. Seminar in Curriculum Development: Gifted and Talented. (3G) Procedures and suggestions for developing gifted and talented programs; philosophy of the teacher, school and community assumptions of curriculum; child characteristics; parental concerns; teaching styles. *(Spring) (Evenings)*

Courses for Advanced Graduate Students Only

SPED 7110. Special Education Program Planning and Evaluation. (3G) Techniques used by individuals in leadership positions in special education as they engage in program planning and evaluation. *(Fall) (Evenings)*

SPED 7112. Issues in Special Education. (3G) Examination of current issues in special education, including legislation, policy, funding, litigation and program trends. *(Spring) (Evenings)*

SPED 7113. Special Education Technology. (3G) Examination of recent advances in the application of educative media, materials and technology in the field of special education. *(Spring) (Evenings)*

SPED 7471. Advanced Internship in Special Education. (3G) A field-based experience in a position of leadership in special education. *(Spring) (Evenings)*

SPED 7611. Seminar in Special Education Research. (3G) Examination of essential readings in each of the areas of exceptionality as they relate to curricular decision-making. *(Fall) (Evenings)*

TEACHING ENGLISH AS A SECOND LANGUAGE (TESL) COURSE DESCRIPTIONS

TESL 5101. Second Language Diagnosis and Evaluation. (3) (3G) For current and future teachers of English as a Second Language (TESL) to develop multiple criteria assessment model as a TESL diagnostician and to master other competencies prescribed by the State of North Carolina. *(Fall)*

TESL 5103. Teaching English as a Second Language. (3) (3G) For current and future teachers of English as a Second Language (TESL) to master a variety of approaches, methods and techniques of teaching ESL and other competencies prescribed by the State of North Carolina. *(Spring)*

TESL 6470. Clinical Experience in Teaching English as a Second Language. (3G) Prerequisite: permission of Department. Program of experiential learning activities in the student's level and/or area of academic concentration in an approved school setting. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

TESL 6476. Seminar and Internship in Teaching English as a Second Language. (3G) Prerequisite: permission of department. Supervised experiences in school or non-school teaching or training with an emphasis on developing skills as an educational professional. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

TEACHING SPECIALTIES (TESP) COURSE DESCRIPTIONS

TESP 5000. Selected Topics in Teaching Specialties. (1-3) (1-3G) Prerequisite: permission of Department. Seminars, independent study and clinical experiences. May be repeated for credit as topics vary and with Departmental approval. *(Fall, Spring, Summer)*

TESP 6000. Topics in Teaching Specialties. (1-3G) Prerequisite: permission of Department. Examination of selected areas of interest in the education profession. May be repeated for credit as topics vary and with Departmental approval. *(Fall, Spring, Summer)*

TESP 6470. Clinical Experience. (3G) Prerequisite: permission of Department. Program of experiential learning activities in the student's level and/or area of academic concentration in an approved school setting. *(Fall, Spring)*

TESP 6476. Seminar and Internship in Teaching Specialties. (3G) Prerequisite: permission of Department. Supervised experiences in school or non-school teaching or training with an emphasis on developing skills as an educational professional. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

TESP 6800. Individual Study in Teaching Specialties. (1-3G) Prerequisite: permission of Department. Designed to permit students to conduct research on selected topics, examine specific educational/human services literature, and develop special projects under the direction of a faculty member. May be repeated for credit as topics vary and with Departmental approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

TESP 7840. Individual Project. (3G) Prerequisite: permission of Department. In consultation with a faculty adviser, the student will identify and solve a problem in a specific area related to student's level and/or area of academic concentration. *(On demand) (Evenings)*

TECHNOLOGY (TECH) COURSE DESCRIPTIONS

TECH 5120. Microcomputer Applications in Education. (3) (3G) Microcomputer systems and software for enhancing teaching, learning and educational management. Hands-on experience in evaluating, selecting and integrating courseware into elementary, secondary and higher education. Principles of programmed learning and instructional design as they relate to microcomputer-based interactive instruction. *(Fall, Spring, Summer) (Evenings)*

Engineering

Degrees: M.S.C.E., M.S.E.E., M.S.M.E., M.S.E., M.E.; doctoral studies in cooperation with North Carolina State University

Civil Engineering Coordinator: Jy S. Wu
Electrical Engineering Coordinator: Yogendra P. Kakad
Mechanical Engineering Coordinator: Rhyn H. Kim

MASTER'S PROGRAMS

The College of Engineering offers Master of Science in Civil Engineering (M.S.C.E.), Master of Science in Electrical Engineering (M.S.E.E.) and Master of Science in Mechanical Engineering (M.S.M.E.) degrees. Additionally, the College offers Master of Science in Engineering (M.S.E.) and Master of Engineering (M.E.) programs. These provide an opportunity for graduate-level engineering education both to improve on-the-job skills and to provide an advanced degree program for career development and/or additional graduate study. The master's programs can be of an applied, theoretical and/or professional nature and offer sufficient flexibility for the inclusion of management, communications and other subjects appropriate for total career development.

Entry into the M.S.C.E., M.S.E.E. and M.S.M.E. programs requires a baccalaureate degree in civil, electrical or mechanical engineering, respectively. The M.S.E. degree offers a more generic program of study available to students who may not possess a baccalaureate degree in engineering. Students desiring to enter the M.S.E. program must present evidence of satisfactory undergraduate preparation in engineering or a closely allied area such as physics, chemistry, or biology.

The M.E. program is an off-campus program designed to provide engineers working in industries throughout North Carolina an opportunity to improve job-related skills and to participate in graduate education while remaining on the job site. A cooperative venture among the three UNC engineering schools (North Carolina State University, North Carolina A&T State University and UNC Charlotte), the M.E. program can be made available on site to all qualified engineers in the state through the use of video-based presentations (video taped courses) and telecommunications. This non-residency, non-thesis program emphasizes the practical application of engineering theory and design to industrial problems. Possession of a bachelor's degree, or its equivalent, from an accredited college or university is the primary requisite for admission to the M.E. program.

Degree Requirements
M.S.C.E., M.S.E.E., M.S.M.E. and M.S.E. Degrees

1. The satisfactory completion of a minimum of 30 hours of approved graduate credit hours as prescribed by the student's department and program committee and fulfilling the following:

   A minimum of 18 semester hours of graduate course credit in a major area of engineering, no more than six of which can be for a research thesis or a creative design project; or, alternatively, no more than three of which can be for a special problem report. The decision as to whether a program will include a thesis, design project or problem report is to be made on an individual basis at the time of filing the student's Plan of Study (see page 368).

   A minimum of 12 semester hours of approved elective graduate course credit. In order to broaden the student's exposure to subject matter and faculty expertise, at least six hours of these electives must be in mathematics, science or another engineering department. Inclusion of business and/or communications courses is permitted.

2. Of the required minimum of 30 semester hours, at least 18 must be in courses primarily for graduate students, i.e., no more than 12 hours of the required 30 can be advanced undergraduate level courses approved for graduate credit.

3. Academic Standards: Only the grades of *A, B* or *C* shall be accepted as credit toward the degree. A grade of *U* in any graduate course will terminate the student's enrollment in specific degree programs subject to readmission as prescribed in the University *Catalog*. Similarly, an accumulation of three *C* grades will result in termination of the student's enrollment, subject to readmission to a program.

   A student in any graduate program is required to maintain satisfactory progress toward the degree. Continued enrollment is at all times subject to review on the basis of academic record and of actions with regard to observance of University rules and regulations.

   Students admitted to full standing will normally be permitted to re-enroll in successive terms, subject to satisfactory performance on coursework and to load limitation imposed by their employers and the University. However, they must complete formal registration within the designated registration period. A student admitted conditionally to full standing will be permitted to continue, subject to satisfactory academic performance, until he or she has attempted 12 semester hours of graduate coursework, at which time admission status will be reviewed by the major department and the Engineering Graduate Committee (EGC) after which the student will be advised as to his or her eligibility to continue.

   Students admitted to the unclassified status are permitted to take up to nine semester hours only and should fulfill requirements for admission to full standing by the application date for the following term if they wish to take additional coursework.

   To qualify for a degree, the student must have a grade point average of at least 3.0 based upon all courses acceptable for graduate credit for which he or she received a grade from the University.

4. Transfer and residence credit are to be in accordance with University regulations.

5. All work offered for the master's degrees must be completed within a six-year period.

M.E. Degree

1. The satisfactory completion of a minimum of 30 graduate credit hours fulfilling the following: A minimum of 18 semester hours of graduate course credit in a major area of engineering. A minimum of 12 semester hours of approved elective graduate course credit.

2. Of the required minimum of 30 semester hours, at least 18 must be in courses primarily for graduate students.

3. Academic Standards: Only the grades of *A, B,* or *C* shall be accepted as credit toward the M.E. degree. A grade of *U* in any course will terminate the student's enrollment in the M.E. program subject to readmission as prescribed in the graduate catalog. Similarly, an accumulation of three *C* grades will result in termination of the student's enrollment, subject to readmission to the program.

   A student in any graduate program is required to maintain satisfactory progress toward the degree. Continued enrollment is at all times subject to review on the basis of academic record and of actions with regard to observance of University rules and regulations.

   To qualify for the M.E. degree, the student must have a grade point average of at least 3.0 based on all courses acceptable for graduate credit for which he/she received a grade from any of the participating universities.

4. Transfer Credit. Courses taken at any of the participating institutions are considered part of the program and are not treated as transfer courses.

   At the time of admission, up to six hours of transfer credit may be accepted from an ABET accredited engineering institution.

5. All courses offered for the Master of Engineering degree must be completed within 10 years.

Plan of Study and Admission to Candidacy

1. Plan of Study

   After completing at least nine but no more than 18 semester credit hours of graduate study, the student shall file a *Plan of Study.* This plan is formulated by the student with the advice and consent of his or her Graduate Program Adviser and the student's Program Committee and submitted for approval to the major department and the College's Engineering Graduate Committee. This plan is to indicate all coursework and any other requirements (thesis, project problems, deficiencies, etc.) which the student is expected to fulfill satisfactorily before the awarding of the Master's degree.

   Relatively minor changes in an approved Plan of Study (e.g., change in a date for when a course is to be taken, or a direct substitution of one course for another course *in the same area)* may be made at the discretion of the student's adviser and Program Committee, although such changes shall be so indicated in the student's Admission to Candidacy.

   However, significant changes such as a change of adviser, change of research topic, change of minor area, etc., shall be submitted immediately to the EGC for its review to ensure that such changes conform to the existing guidelines for the specific program.

2. Student's Program Committee

   Each student's Program Committee shall be composed of not less than three members of the graduate faculty, *one of whom shall be from a department other than the student's major,* with the Graduate Program Adviser serving as chair of the committee. The committee is recommended by the department after appropriate consultation between the adviser and student, and is subject to approval by the EGC at the time of submission of the Plan of Study.

   If the student is to pursue an industrially oriented design project through an internship in a local industrial or governmental organization, the person supervising the internship project shall be added to the Program Committee upon approval of the project by the student's Program Committee.

   The functions of the student's Program Committee are to participate in planning the student's program, evaluate his or her academic progress and make appropriate recommendations, evaluate the student's research thesis or design project, administer the comprehensive final examination, and, finally, make the recommendation as to the candidate's qualifications for the degree.

3. Admission to Candidacy

   Upon completion of a substantial amount of graduate work and in no case later than two weeks prior to the beginning of the semester in which the student expects to complete all requisites for the degree, the student shall file for Admission to Candidacy on a form supplied by the Graduate School. This application is a checksheet approved by the adviser, department chair, and the College Dean listing all coursework to be offered for the degree (including transfer credit and courses in progress). A tentative or, if possible, actual date for the final examination should be agreed upon and indicated on this application. The date should be realistic and allow ample time for completion and review of the thesis or project.

Final Examination

Upon completion (or near completion) of all degree requirements as indicated in the Admission to Candidacy, the candidate shall stand for a final comprehensive examination(s). This examination(s) (written, oral or both) is to be set and administered by the student's Program Committee and is to cover those areas of study and/or research as deemed appropriate by the Committee.

The result of this examination and the Committee's recommendation as to the candidate's qualifications for the degree shall be transmitted to the Graduate School Office through the EGC.

COOPERATIVE PH.D. PROGRAM IN ENGINEERING

The College of Engineering at UNC Charlotte has a cooperative arrangement with North Carolina State University (NCSU) to permit Ph.D. degree candidates located in Charlotte to be enrolled in the Ph.D. program at NCSU with the opportunity that most of the coursework and the dissertation research can be carried out at UNCC. In addition to courses available at UNCC, selected

doctoral-level courses from other participating institutions are available via the MCNC telecommunications network. See pages 409-411 for additional information and course descriptions for the Microelectronics Program.

Admission. Admission requirements to the cooperative Ph.D. program are:

1. The student must have previously earned a master's degree in engineering at UNCC or other accredited university. Admission for non-UNCC master's graduates will be conditional upon satisfactory completion of nine to 18 hours of coursework at UNCC.
2. The student must be accepted by a department in the UNCC College of Engineering.
3. The student must be accepted by the UNCC Graduate School.
4. The student must be sponsored for the Ph.D. program by the department in which he or she has been accepted at UNCC.
5. The student's academic interests must parallel those of a UNCC faculty member who has been appointed to the NCSU graduate faculty or who is deemed eligible for such appointment.
6. The student must be recommended by the sponsoring department at UNCC for admission to the NCSU Ph.D. program. The student must be accepted by the NCSU Graduate School and the corresponding engineering department at NCSU. This acceptance by both UNCC and NCSU constitutes admission to the Ph.D. Program which normally should be completed within the second semester of work beyond the master's degree.

Degree Requirements. The degree of Doctor of Philosophy is to be awarded by NCSU to students who have accrued expanded knowledge beyond the master's degree and have demonstrated the capability to undertake and accomplish significant research in a specialty area with a minimum of supervision. UNCC guidelines for the degree requirements for the Doctor of Philosophy are the satisfactory completion of a minimum of 48 semester hours of graduate credit beyond the master's as approved by the student's Graduate Advisory Committee and fulfilling the following:

(a) A minimum of 15 semester hours of coursework in a major area at the (UNCC) 6000 level or above.

(b) 18 semester hours of research credits.

(c) A minimum of six semester hours of graduate coursework in each of two minor areas.

(d) Satisfactory completion of written qualifying examinations covering the major and minor areas.

(e) Satisfactory presentation and oral defense of a proposal for the research dissertation which meets the guidelines of a national funding agency such as DOE, NSF, etc.

(f) A research dissertation in the major area of specialization and a successful oral defense (Final Examination) of the dissertation.

(g) All work offered for the Ph.D. degree including transfer credits must be completed within a six-year period.

Minor in Operations Research. The Departments of Civil Engineering, Electrical Engineering and Mechanical Engineering participate in the program leading to an interdiciplinary graduate minor in Operations Research. See page 412 for complete information and program requirements.

CIVIL ENGINEERING (CEGR) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which carry graduate credit. Additional work required of students receiving graduate credit. See pages 254-257 for complete course descriptions.

CEGR 4141. Process Engineering. (3) (3G)

CEGR 4142. Environmental Engineering II. (3) (3G)

CEGR 4162. Transportation Planning. (3) (3G)

CEGR 4222. Structural Steel Design II. (3) (3G)

CEGR 4224. Advanced Structural Analysis. (3) (3G)

CEGR 4226. Reinforced Concrete Design II. (3) (3G)

CEGR 4262. Traffic Engineering. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department.

CEGR 5090. Special Topics in Civil Engineering. (1-4) (1-4G) Study of specific new areas emerging in the various fields of civil engineering. May be repeated for credit. *(On demand)*

CEGR 5108. Finite Element Analysis and Applications. (3) (3G) Prerequisite: consent of instructor. Finite element method and its application to engineering problems. Application of displacement method to plane stress, plane strain, plate bending and axisymmetrical bodies. Topics include but are not limited to dynamics, heat transfer, fluid mechanics, structural mechanics, and electric fields. (Dual-listed with MEGR 5108.) *(Spring)*

CEGR 5122. Advanced Topics in Structural Steel. (3) (3G) Prerequisites: CEGR 4222 or consent of instructor. Theory of plastic-behavior of steel structures; current topics in structural steel. *(On demand)*

CEGR 5128. Matrix Methods of Structural Analysis. (3) (3G) Prerequisite: consent of instructor. Derivation of the basic equations governing linear structural systems. Application of stiffness and flexibility methods to trusses and frames. Solution techniques utilizing digital computer. *(On demand)*

CEGR 5141. Bioprocess Technology. (3) (3G) Prerequisites: CEGR 4141 and general microbiology, or consent of the department. Introduction to metabolic pathways, growth kinetics and reactor theories. Laboratory investigation of the operation, optimization and scale-up problems associated with batch and continuous culture of microorganisms. Process analysis and modeling of environmental engineering processes. *(Spring)*

CEGR 5142. Waste Incineration. (3) (3G) Prerequisite: consent of the department. Fundamentals of incineration of hazardous/solid wastes. Thermochemical applications and equipment design. Computer modeling of the incineration process and air quality control. *(Spring)*

CEGR 5144. Engineering Hydrology. (3) (3G) Prerequisite: consent of instructor. A quantitative study of the various components of the water cycle, including precipitation, runoff, ground water flow, evaporation and transpiration, stream flow. Hydrograph analysis, flood routing, frequency and duration, reservoir design, computer applications. *(On demand)*

CEGR 5146. Engineering Hydraulics. (3) (3G) Prerequisite: consent of instructor. Problems of fluids as applied in civil engineering; open channel flow; dams and spillways; water power; river flow and backwater curves; pipe networks, fire flow, sewage collection, groundwater, and computer applications. *(On demand)*

CEGR 5161. Advanced Traffic Engineering. (3) (3G) Prerequisite: CEGR 3161 or consent of instructor. Analysis of basic characteristics of drivers, vehicles and roadway that affect the performance of road systems. Stream flow elements, volume, density, speed. Techniques of traffic engineering measurements, investigations and data analysis, capacity analysis. Intersections, accidents, parking. *(On demand)*

CEGR 5165. Urban Systems Engineering. (3) (3G) Prerequisite: CEGR 3372 or consent of instructor. Survey of economic, political, sociological and technological factors affecting modern growth; a planning process and its role in solving selected urban problems with emphasis on engineering contributions. *(On demand)*

CEGR 5171. Urban Public Transportation. (3) (3G) Prerequisite: CEGR 3161 or consent of department. Planning, design, and operation of bus, rail, and other public modes. Relationship between particular modes and characteristics of urban areas. Funding, security and other administrative issues. *(Fall) (Alternate Years)*

CEGR 5181. Highway Safety. (3) (3G) Prerequisite: CEGR 3161 or consent of department. Engineering responses at the state and local levels to the problem of highway safety. Extent of the highway safety problem, elements of traffic accidents, common accident countermeasures, collection and analysis of accident data, evaluation of safety-related projects and programs, and litigation issues. *(Fall) (Alternate Years)*

CEGR 5232. Bioenvironmental Engineering. (3) (3G) Prerequisites: CEGR 3141 or consent of the department. Theoretical principles and design of aerobic and anaerobic biological unit processes for renovating waters and wastewaters. Activated sludge, aerated and facultative lagoons, rotating biological contractors, trickling and anaerobic filters. *(On demand)*

CEGR 5892. Individualized Study and Projects. (1-6) (1-6G) Prerequisites: consent of the department. Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

CEGR 5991. Graduate Research in Civil Engineering. (1-4) (1-4G) Prerequisite: consent of the department. Independent study of a theoretical and/or experimental problem in a specialized area of civil engineering. May be repeated for credit. *(On demand)*

Courses for Graduate Students Only

CEGR 6090. Special Topics in Civil Engineering. (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

CEGR 6129. Structural Dynamics. (3G) Prerequisite: consent of instructor. Analysis and design of structures subject to dynamic and static loading, single degree of freedom approach, vibration of structural components including damping and elasto-plastic behavior. *(On demand)*

CEGR 6141. Stream Pollution Analysis. (3G) Prerequisite: consent of instructor. Mathematical modeling of water quality in receiving streams including: generation of point and nonpoint sources of pollution; formulation of transport equations for contaminants in stream and estuarine water; and prediction of the fate, persistence and transformation of chemical pollutants in aquatic ecosystems. Computer model simulation and case studies. *(On demand)*

CEGR 6161. Traffic Control and Operation. (3) Prerequisite: CEGR 5161 or consent of instructor. Traffic control theory and application; traffic regulation, laws and ordinances; speed control, intersection control, flow control and parking control; design and application of control devices, investigation, evaluation techniques; statistical analysis; administration. *(On demand)*

CEGR 6171. Air Quality Control. (3G) Prerequisite: consent of instructor. Study of various types of air pollutants, their sources, nature and effects. Examination of air quality criteria, standards and monitoring. Analysis of feasibility, applicability and efficiency of diverse systems of control. Evaluation of goal and research needs in the future. *(On demand)*

CEGR 6181. Traffic Flow Theory. (3G) Prerequisite: CEGR 5161 or consent of instructor. Logical foundations and mathematical representation of traffic flow; interrelation between microscopic and macroscopic equations of motion for highway traffic; stochastic properties of traffic at low and moderate densities. Car-following theories of traffic flow at high densities. Applications of queuing theory to transportation. *(On demand)*

CEGR 6182. Transportation Systems Analysis. (3G) Prerequisite: CEGR 5161 or consent of instructor. Issues, concepts and methods of transportation systems engineering and planning. Decision making in transportation management. The application of analytical methods to the development and evaluation of transport systems. *(On demand)*

CEGR 6892. Individualized Study and Projects. (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

CEGR 6991. Graduate Thesis Research. (1-6G) Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

ELECTRICAL ENGINEERING (EEGR) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which carry graduate credit. Additional work required of students receiving graduate credit. See pages 270-273 for complete course descriptions.

EEGR 4111. Control Systems Theory I. (3) (3G)

EEGR 4112. Control Systems Theory II. (3) (3G)

EEGR 4113. Modeling and Analysis of Dynamic Systems. (3) (3G)

EEGR 4114. Topological Aspects of Circuit Theory. (3) (3G)

EEGR 4121. Antennas. (3) (3G)

EEGR 4122. Acoustics. (3) (3G)

EEGR 4131. Linear Integrated Electronics. (3) (3G)

EEGR 4141. Power System Analysis I. (3) (3G)

EEGR 4142. Power System Analysis II. (3) (3G)

EEGR 4143. Electrical Machinery. (3) (3G)

EEGR 4151. Introduction to Robotics . (3) (3G)

EEGR 4182. Digital System Testing. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department.

EEGR 5090. Special Topics. (1-6) (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

EEGR 5101. Advanced Computer Utilization. (3) (3G) Prerequisite: consent of the department. The use of computers in large scale engineering problems. Topics include flow diagrams, matrix analysis of systems, applications of iteration methods to non-linear problems, eigenvalue problems, optimization and handling of large engineering data base problems. Engineering applications will be emphasized. *(On demand)*

EEGR 5102. Engineering Simulation. (3) (3G) Prerequisite: EEGR 3101 or consent of the department. A wide range of simulation related topics will be introduced including the theory of simulation, characteristics of simulators, and trade-offs in simulation studies. Continuous and discrete simulation with primary emphasis on application of simulation techniques to engineering problems. Simulation of actual problems based on students' interest and experience areas. *(On demand)*

EEGR 5103. Applied Computer Graphics. (3) (3G) Prerequisite: permission of the department. Interactive graphics; raster, character, vector, graphics, display technologies; rotation, scaling, translating of graphics image; image processing/enhancement; feature extraction; 3-D graphics; hidden lines. *(On demand)*

EEGR 5104. Computational Methods in Power Systems. (3) (3G) Prerequisite: EEGR 4142 or permission of the department. Numerical techniques for analysis, operation and planning of power systems. Sparse matrix techniques applied to power flow algorithms. Economic operation of power systems. Optimum power flow. *(On demand)*

EEGR 5111. Control Systems. (3) (3G) Prerequisite: consent of the department. Mathematical models and characteristics of control systems. Performance and stability of linear feedback systems. Root locus and frequency response techniques. Stability in frequency domain. Time domain analysis. Design and compensation of control systems. Credit will not be given for EEGR 5111 where credit has been given for EEGR 4111. *(Fall) (Evenings)*

EEGR 5112. Nonlinear Analysis. (3) (3G) Prerequisite: EEGR 3112. Solution of nonlinear problems using numerical and graphical methods, phase plane plots, analysis of singular points and analytical techniques. Forced oscillating systems. Stability of nonlinear systems. Use of analog and digital computer to study nonlinear problems. *(On demand)*

EEGR 5113. Network Synthesis. (3) (3G) Prerequisite: EEGR 4114 or equivalent. The positive real concept, properties and methods of testing. Realizability conditions on driving point functions. Methods of synthesis of one-port. Physical realizability and properties of two-port networks. Transfer function synthesis. Approximation methods. *(On demand)*

EEGR 5114. Device Characterization, Parameterization and Modeling. (3) (3G) Prerequisite: EEGR 3132 and ESGR 4134 or permission of the department. Advance device and circuit analysis; device and circuit simulation using SPICE, ECAP or equivalent. Parametric modeling of active devices. Device characterization and parameterization; temperature effects; thermal cycling. Analysis of device failure modes. *(On demand)*

EEGR 5121. Communications Theory I. (3) (3G) Prerequisite: EEGR 3112. Information transmission and modulation systems. Analysis of transmission through electric networks, analysis and comparison of modulation systems, analog and digital communication systems. Introduction to information theory, sampling theory and noise. Introduction to statistical communications theory. *(Fall) (Evenings)*

EEGR 5123. Advanced Electromagnetic Field Theory. (3) (3G) Prerequisite: EEGR 3122 or permission of the department. Maxwell's equations and propagation. Properties of guided and surface waves. Wave properties of light; physical and fiber optics. *(On demand)*

EEGR 5125. Optoelectronics. (3) (3G) Prerequisites: EEGR 3122 and PHYS 2241 or permission of the department. The engineering aspects and applications of modern optics. Optical communications, optical signal and data processing, principles of integrated optics. Fiber optical communications. Fast-Fourier transforms and diffraction theory applied to computed holography, computed tomography, and optical processing. *(On demand)*

EEGR 5132. Integrated Circuit Electronics. (3) (3G) Topics include electrical transducers and instrumentation amplifiers, active filters, signal conditioning and analog processing, data coversion, process control, electronic power supplies, reliability, noise and low-level signal processing. *(On demand)*

EEGR 5133. VLSI Systems Design. (3) (3G) Prerequisite: EEGR 3131 or permission of the department. Techniques for analysis and design of very large scale integrated circuits. Comparison with conventional techniques. Regularity and synthesis. A project-oriented course relying heavily on computer-aided design. *(Fall) (Evenings)*

EEGR 5134. Advanced VLSI Systems Design. (3) (3G) Prerequisite: EEGR 5133. A project-oriented course dealing with advanced topics in VLSI systems design and analysis such as circuit design techniques, array structures, performance estimation, automated routing and device electronics. *(Spring)*

EEGR 5135. Physical Electronics. (3) (3G) Prerequisite: EEGR 3122 or PHYS 3181 or permission of the department. Dynamics of charged particles; electron motion in electromagnetic fields; types of electron emission; beam focusing; longitudinal and transverse beam waves; microwave generation; plasma parameters. *(On demand)*

EEGR 5137. Device Electronics for Integrated Circuits. (3) (3G) Prerequisites: EEGR 3132 and ESGR 4134, or permission of the department. The basic operating principles of electronic devices in integrated circuits are treated. The physical models of these devices are discussed. Graduate students are required to carry out laboratory experimentation. *(Fall) (Evenings)*

EEGR 5139. Digital Communication Systems. (3) (3G) Prerequisites: EEGR 2181 and 3131. Topics include digital data transmission systems, signal and system representation, digital system performance characterization, pulse code modulation, and statistical communications theory. *(On demand)*

EEGR 5141. Unsymmetrical Analysis of Power Systems. (3) (3G) Prerequisite: EEGR 4142 or permission of the department. Application of symmetrical components to the calculation of overcurrents and overvoltages during unsymmetrical faults. Characterization of generators, transformer banks and transmission lines for unsymmetrical analysis. Methods for grounding the system neutral. *(On demand)*

EEGR 5142. Power Generation: Operation and Control. (3) (3G) Prerequisite: EEGR 4142 or permission of the department. Characteristics of power generation units, steam, nuclear reactor and hydroelectric. Economic and thermal system dispatch. Transmission losses, load flow problems. Hydro scheduling, hydro-plant models. Energy production cost models. Interchange evaluation. *(Fall) (Alternate years) (Evenings)*

EEGR 5143. Dynamic and Transient Analysis of Power Systems. (3) (3G) Prerequisite: EEGR 4142 or permission of the department. Large-scale systems state descriptions and hierarchical control. State space models, dynamic stability and testing. Stability of simple and multi-machine systems. Transient phenomena in electrical power systems. Transient stability problem. *(Spring) (Alternate years) (Evenings)*

EEGR 5161. Control of Robotic Manipulators. (3) (3G) Prerequisites: EEGR 4161 and 4111 or equivalents. Control of industrial robots including linear, nonlinear, and adaptive control of robot's motion plus control of forces and torques exerted by the end-effector. Additional topics include computer animation of the controlled behavior of indutrial robots, actuator and sensor types, robot vision, and control computer/robot interfacing (dual-listed with MEGR 5128). *(Spring)*

EEGR 5165. Laser Electronics. (3) (3G) Prerequisites: EEGR 3122 and PHYS 2241 or permission of the department. Laser oscillation, excitation, amplification, dispersion, absorption, basic principles of quantum electronics, and general characteristics of lasers. Semiconductor lasers switching and modulation, photovoltaic and photodetectors. Ray tracing in an optical system, Gaussian beams in continuous media, and nonlinear optics, CW and pulsed lasers, Q-switching, mode locking, electrical and opto-electronic engineering aspects of laser technology. Basic spectroscopy, applications to semiconductor fabrication, and surface processing. *(On demand)*

EEGR 5181. Computer Arithmetic. (3) (3G) Prerequisite: permission of the department. Principles, architecture and design of fast two operand adders, multi-operand adders, standard multipliers and dividers. Cellular array multipliers and dividers. Floating point processes, BCD and excess three adders, multipliers and dividers. *(On demand)*

EEGR 5265. Microwave Devices and Electronics. (3) (3G) Prerequisites: EEGR 3122 and PHYS 2231 with grades of *C* or better or permission of the department. Microwave transmission line theory, parameters, microwave waveguides, microstrip line and components including resonators, slow-wave structures, tees, rings, couplers, circulators, isolators, and microwave tubes. Microwave solid state electronics including microwave transistors, tunnel diodes, transferred electron devices, avalanche transit-time devices, and mono-lattice microwave integrated circuits. *(On demand)*

EEGR 5892. Individualized Study. (1-6) (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

Courses for Graduate Students Only

EEGR 6021. Advanced Topics in EM and Applications. (3G) Prerequisite: permission of the department. Possible topics include: advanced boundary value problems; nonlinear magnetic materials; wave guides and resonant cavities; magnetohydrodynamics and plasmas; relativistic effects; charged particle dynamics; radiation. *(On demand)*

EEGR 6090. Special Topics. (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

EEGR 6101. Advanced Computer Graphics. (3G) Prerequisites: EEGR 5103 and 5133 or permission of department. A project-oriented course using and developing techniques of CAD/CAM graphics, hardware and software development. Advanced application of graphics in computer-aided systems design. *(On demand)*

EEGR 6102. Optimization of Engineering Designs. (3G) Prerequisite: EEGR 5101 or consent of department. The development of computationally feasible algorithms for solving optimization problems in engineering designs. Introduction to non-linear programming methods; study of constrained and unconstrained problems, linear programming problems and other related topics. *(On demand)*

EEGR 6111. Systems Theory. (3G) Prerequisite: EEGR 4112 or consent of department. State space concepts and solutions. Introduction to theory of deterministic linear systems. Application of matrix methods and vector difference equations to lumped parameter electrical mechanical and fluid systems, and discrete time systems. Frequency domain techniques in signal and systems analysis. Computer simulation of system dynamics. *(Fall) (Evenings)*

EEGR 6112. Digital Control Systems. (3G) Prerequisites: EEGR 6111 and 4181 or consent of the department. Time-domain and Z-domain analysis of linear discrete systems, open and closed loop sampled data systems, engineering characteristics of computer control systems, simulation of system dynamics. *(Spring) (Alternate years)*

EEGR 6113. Digital Signal Processing I. (3G) Prerequisite: EEGR 4112 or consent of the department. Topics include complex variables, phasors, digital signals and systems. Fourier transform of digital signals, digital filters, Kepstrum FFT, random processes, spectral estimation, deconvolution. *(Fall) (Alternate years)*

EEGR 6114. Digital Signal Processing II. (3G) Prerequisite: EEGR 6113 or permission of the department. Discrete Hilbert Transforms, discrete random signals, effect of finite register length in digital and signal processing, speech processing, radar and other applications. *(Spring) (Alternate years) (Evenings)*

EEGR 6115. Optimal Control Theory I. (3G) Prerequisite: EEGR 6111 or permission of the department. Optimum control of continuous-time and discrete time systems. The Maximum Principle and Hamilton Jacobi Theory. Theory of optimal regulator, state estimation and Kalman Bucy Filter. Combined estimation and control—the Linear Quadratic Gaussian Problems. Computational methods in optimum control systems. *(Fall) (Alternate years) (Evenings)*

EEGR 6116. Optimal Control Theory II. (3G) Prerequisite: EEGR 6115 or permission of the department. A continuation of EEGR 6115 with emphasis on stochastic systems. Optimal filtering. Discrete-time Kalman filter and Kalman filter properties. Parameter identification. Multivariable control systems, system sensitivity and robustness. *(Spring) (Alternate years) (Evenings)*

EEGR 6117. Applied Artificial Intelligence. (3G) Prerequisites: EEGR 6111 and CSCI 5150. Problem of creating intelligent behavior in machines, emphasizing computer-oriented approaches; practical applications such as machine aids to human problem-solving and computer control of external manipulators; current developments. *(On demand)*

EEGR 6118. Applied Digital Image Processing. (3G) Prerequisite: EEGR 6113. Digital image fundamentals; comparison of image transforms including Fourier, Walsh, Hadamard and Cosine; image data compression techniques; image enhancement algorithms; image restoration; image encoding process; image segmentation and description; relationship of hardware restrictions to image fidelity. *(On demand)*

EEGR 6121. Advanced Theory of Communications I. (3G) Prerequisite: introductory probability course or permission of the department. Statistical communications theory and modern communications systems emphasizing modulation and methods of taking into account the effects of noise on various systems. *(Fall) (Alternate years) (Evenings)*

EEGR 6122. Advanced Theory of Communications II. (3G) Prerequisite: EEGR 6121 or permission of the department. Continuation of EEGR 6121 including coding and decoding methods. Wave form communications. Applications. *(Spring) (Alternate years) (Evenings)*

EEGR 6125. Optoelectronic Information Processing. (3G) Prerequisite: EEGR 5125 with a grade of *B* or better or permission of the department. Spatial light modulation including magneto-optic and elecro-optic light modulators, optical bistable devices and logic gates, optical processing components such as array detectors and Charge Couple Devices (CCD), multiple-value logic, systolic processors and optical logic arrays, symbolic computing, optical interconnects, holographic elements and artificial intelligence, optical implementation of neural computers. *(Spring)*

EEGR 6131. Hybrid Microelectronics. (3G) Prerequisite: EEGR 5132 or permission of the department. A project-oriented course involving design, bonding, interconnect and testing of a multidie hybrid microelectronics circuit. Emphasis placed upon use of I.C.'s of various technologies in these designs to optimize performance. *(On demand)*

EEGR 6132. Advanced Semiconductor Device Physics. (3G) Prerequisite: EEGR 5137 or permission of the department. A review of semiconductor physics, bipolar and unipolar devices, photonic devices and methods of measuring specific device characteristics. *(Spring)*

EEGR 6133. MOS Physics and Technology. (3G) Prerequisite: EEGR 6132 or permission of the instructor. The theoretical and practical aspects of the metal oxide semiconductor (MOS) system, its electrical properties, and the measurement and the technology for their control. These topics are developed from simple beginnings to the current state of the art. *(Fall)*

EEGR 6141. Power System Relaying. (3G) Prerequisite: EEGR 5141 or permission of the department. Function and principles of protective relaying instrument transformers. Directional, distance and differential relays. Protection of generators, transformers, and transmission lines. Ground fault protection. Computer relaying, algorithms for protective relaying. *(On demand)*

EEGR 6142. Voltage Transients and Surge Protection. (3G) Prerequisite: EEGR 5141 or permission of the department. Overvoltages due to lightning and switching surges. Traveling waves on transmission lines. Surge arrestors, insulation coordination. Surge protection of transmission lines, substations and rotating machine. Shielding and grounding. *(On demand)*

EEGR 6143. Power System Control. (3G) Prerequisites: EEGR 4142 and 4111 or permission of the department. Computer functions for automatic control of power systems. Automatic generation control, regulation of frequency and tie-line power interchanges. Automatic voltage regulation, excitation system model. Power system dynamics. Computer control centers. *(On demand)*

EEGR 6151. Advanced Microelectronics Projects. (3G) Prerequisite: EEGR 5133. A project-oriented course intended for the advanced microelectronics student who wishes to pursue the testing and simulation at various levels (component, gate, cell and system), as well as the design of a significant VLSI implementation. *(On demand)*

EEGR 6181. Switching and Automata Theory I. (3G) Prerequisite: consent of department. Topics include sets, relations, lattices, Boolean algebras; functional decomposition and symmetric functions; threshold logic; multiple-value logic; fault detection and fault tolerant design; finite state machines, incompletely specified machines, minimization; state identification and fault-detection experiments; finite state recognizers. *(On demand)*

EEGR 6182. Switching and Automata Theory II. (3G) Prerequisite: EEGR 6181 or permission of the department. Advanced topics in the area of switching and automata theory. Topics typically chosen to accommodate student and instructor interest; may include tesselation automata, pushdown/linear-bounded/turing automata (and the formal languages each accepts), computability and testability, digital system architecture, binary and non-binary switching theory, and related areas. *(On demand)*

EEGR 6183. Multiprocessor Systems Design. (3G) Prerequisites: EEGR 3184 and 5131. Topics include applications of multiprocessors to digital systems design; hardware/software tradeoff considerations; master/slave, multiple/master and loosely coupled systems; data handling and synchronization problems, networking. *(On demand)*

EEGR 6184. Computer System Engineering. (3G) Prerequisite: consent of the department. Topics include data formats, register transfer operations, computer organization, microprogram control and ALU design. Arithmetic algorithms, I/O organization and memory organization are also covered. Specific emphasis is placed throughout on tradeoffs between hardware and software. *(On demand)*

EEGR 6185. Advanced Microprocessor-Based Design. (3G) Prerequisite: CSCI 4181 or permission of the department. An advanced course in computer design utilizing 16-bit microprocessors. Architecture, software, and interface techniques. This course is project-oriented, involving the use of a logic analyzer. *(Fall) (Evenings)*

EEGR 6186. Fault Testable Hardware Design. (3G) Prerequisite: EEGR 4182 or permission of the department. Test generation using the D-algorithm and PODEM; partitioning; scan design, built-in tests, logic system testing using a RTL; and fault tolerance. This course is project-oriented involving the use of a logic analyzer and test simulator. *(Spring) (Evenings)*

EEGR 6890. Individualized Study and Projects. (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

EEGR 6991. Graduate Thesis Research. (0-6G) Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

ENGINEERING SCIENCE (ESGR) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which carry graduate credit. Additional work required of students receiving graduate credit. See page 293 for complete course descriptions.

ESGR 4131. Solid State Transformations. (3) (3G)

ESGR 4134. Solid State Electronics. (3) (3G)

ESGR 4162. Materials Production and Process. (3) (3G)

ESGR 4165. Introduction to Nondestructive Evaluation Methods. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department.

ESGR 5090. Special Topics. (1-6) (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

ESGR 5102. Introduction to Continua. (3) (3G) Prerequisites: MEGR 3111, EEGR 3121, ESGR 3141 and MEGR 3114 or consent of instructor. A unified treatment of those topics which are common to all continua. Stress, deformation and velocity fields, constitutive equations and field equations. Representative applications in solid, fluid and electromagnetic continua, including interaction problems. *(On demand)*

ESGR 5114. Energy Conversion II. (3) (3G) Prerequisites: MEGR 3112 and 4111. Study of conversion of heat into power. Thermoelectric, magnetohydrodynamic engines, thermionic converters, solar and fuel cells. *(Alternate years)*

ESGR 5132. Quantum and Parametric Electronics. (3) (3G) Prerequisite: EEGR 3122 or PHYS 3131 or consent of instructor. Quantum mechanics; spin energy levels; elementary masers, optical resonance; traveling wave tubes; backward wave oscillators. *(Alternate years)*

ESGR 5161. Atomic Processes in Solids. (3) (3G) Prerequisite: ESGR 4131 or consent of the Department. Processes dependent on large- and small-scale atomic motions leading to changes in material structures and properties. Theories of diffusion controlled and diffusionless transformations. Modern concepts in structure and property control. *(On demand)*

ESGR 5164. Diffraction and Spectroscopic Studies of Matter. (3) (3G) Prerequisite: senior or graduate standing and consent of instructor. Atomic arrangements in crystalline and non-crystalline forms of matter. Symmetry properties of crystals. Treatment of diffraction theory and experimental methods. X-ray diffraction and spectroscopic analysis of matter. *(Alternate years)*

ESGR 5892. Individualized Study and Projects. (1-6) (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

Courses for Graduate Students Only

ESGR 6090. Special Topics. (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

ESGR 6101. Transport Processes. (3G) Prerequisite: consent of instructor. Unified field theory approach to the fluid transport of momentum, energy, mass and electrical charge. Statistical theories of turbulence and molecular transport. Multiphase systems, chemically reacting flows, ionized fluids, separation processes. *(On demand)*

ESGR 6102. Separation Processes. (3G) Prerequisite: consent of instructor. Theory of stagewise and continuous separation processes. Applications include distillation, extraction, absorption and thermal diffusion. *(On demand)*

ESGR 6103. Chemical Reaction Engineering. (3G) Prerequisite: consent of instructor. Theory and design of batch and flow chemical reactors. *(On demand)*

ESGR 6104. Nuclear Reactor Theory. (3G) Prerequisite: consent of instructor. Neutron transport theory applied to the engineering design of nuclear reactors. Generation, diffusion and slowing down of neutrons. Nuclear ballistics and collision phenomena. Reactor kinetics and thermodynamics. Homogenous and heterogenous reactors. *(On demand)*

ESGR 6166. Deformation and Fracture of Materials. (3G) Prerequisite: consent of instructor. Macroscopic and microscopic aspects of elastic and plastic deformation and fracture; applications of dislocation theory to an interpretation and control of mechanical properties; temperature, strain rate and texture effects. *(On demand)*

ESGR 6892. Individualized Study and Projects. (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

ESGR 6991. Graduate Thesis Research. (1-6G) Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(Fall, Spring)*

MECHANICAL ENGINEERING (MEGR) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduate students which carry graduate credit. Additional work required of students receiving graduate credit. See pages 290-293 for complete course descriptions.

MEGR 4111. Heat Transfer. (3) (3G)

MEGR 4112. Intermediate Fluid Mechanics. (3) (3G)

MEGR 4113. Energy Conversion I. (3) (3G)

MEGR 4127. Introduction to Robotics. (3) (3G)

MEGR 4143. Mechanical Vibrating Systems. (3) (3G)

MEGR 4144. Intermediate Dynamics. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

The 5000-level courses are first-year graduate courses although some advanced seniors may enroll with permission of the department.

MEGR 5090. Special Topics. (1-6) (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

MEGR 5108. Finite Element Analysis and Applications. (3) (3G) Prerequisites: MEGR 5141 and MATH 6171 or permission of the Department. An introduction to the finite element method and its application to engineering problems. Application of the displacement methods to plane stress, plane strain, plate bending and axisymmetrical bodies. Topics may include but are not limited to: dynamics, heat conduction, and structural mechanics. (Dual-listed with CEGR 5108). *(Spring)*

MEGR 5111. Advanced Engineering Thermodynamics. (3) (3G) Prerequisites: MEGR 3112 and MATH 3142. Postulational treatment of the laws of thermodynamics. Equilibrium and maximum entropy postulates. Development of formal relationships and principles for general systems. Applications to chemical, magnetic, electric, and elastic systems. *(On demand)*

MEGR 5113. Dynamics and Thermodynamics of Compressible Flow. (3) (3G) Prerequisites: MEGR 3111 and 3114. Compressible flow equations, isentropic flow, normal shock waves, Fanno and Rayleigh line flows. Nonsteady one dimensional flow. *(Alternate years)*

MEGR 5118. Thermal Environmental Engineering. (3) (3G) Prerequisite: MEGR 4111. Application of the thermodynamic and heat transfer principles to the analysis of thermal environmental systems. Topics include thermodynamic properties of moist air, psychometric charts, transfer processes, heating and cooling of moist air, coils, physiological effects of thermal environments, food processing and storage. *(Alternate years)*

MEGR 5121. Mechanism Analysis. (3) (3G) Prerequisite: MEGR 3221 or consent of the department. Analysis of coplanar and spatial mechanisms, application of matrix methods in analysis of mechanisms, mobility analysis of mechanisms, rigid body guidance, computer aided analysis of mechanisms. *(Spring) (Evenings)*

MEGR 5125. Vibrations of Continuous Systems. (3) (3G) Prerequisite: MEGR 4143. Analysis of vibration of continuous linear elastic structures such as strings, rods, beams and plants with varying boundary conditions. Approximate solution techniques such as Rayleigh, Rayleigh-Ritz and Galerkin are presented. *(Alternate years)*

MEGR 5127. Computer-Aided Manufacturing. (3) (3G) Prerequisites: MEGR 3253 and consent of the department. Topics covered include flowline production, numerical control, computer aided process monitoring and control, group technology, flexible manufacturing, and material requirement planning. *(Alternate years)*

MEGR 5128. Control of Robotic Manipulators. (3) (3G) Prerequisites: MEGR 4127 or EEGR 4151. Control of industrial robots including linear, nonlinear, and adaptive control of the motion of robots; plus control of forces and torques exerted by the end-effector. Additional topics include computer animation of the controlled behavior of industrial robots, actuators and sensors, robot vision and artificial intelligence, and control computer/robot interfacing (dual-listed with EEGR 5151). *(Spring)*

MEGR 5141. Theory of Elasticity I. (3) (3G) Prerequisite: MEGR 3221 or equivalent. Introduction to the theory of elastic media; the fundamentals of stress, strain, stress-strain relationships, compatibility and equilibrium. Applications to two- and three-dimensional problems. Structural mechanics and energy methods. *(Alternate years)*

MEGR 5146. Experimental Stress Analysis. (3) (3G) Prerequisite: MEGR 5141 or consent of the department. Theoretical and experimental techniques of stress and strain analysis, with experimental emphasis on strain gages and instrumentation. Brittle coatings and photoelasticity are also considered. Two lectures and a two-hour lab per week. *(Alternate years)*

MEGR 5892. Individualized Study and Projects. (1-6) (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

Courses for Graduate Students Only

MEGR 6090. Special Topics. (1-6G) Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

MEGR 6111. Convective Heat Transfer. (3G) Prerequisites: MEGR 4111 and 4112. Heat and momentum transfer prediction in channel flows and boundary layers. Differential equation methods for fully developed and entry length laminar tube flows. Similarity solutions for laminar heat transfer. Superposition methods for non-uniform boundary conditions. Integral equations of the boundary layer, approximate and semiempirical methods of solution. *(Alternate years)*

MEGR 6112. Radiative Heat Transfer. (3G) Prerequisite: MEGR 4111. Fundamentals of radiation heat transfer, analysis of gray body and wavelength dependent systems; radiation from gases at high temperature, and particulate-laden gases; combined radiation and conduction. *(On demand)*

MEGR 6113. Advanced Conductive Heat Transfer. (3G) Prerequisite: MEGR 4111. Theory of steady and unsteady heat conduction in isotropic and anistropic media. Treatment of concentrated and distributed heat sources. Application of the finite difference and finite element methods. *(Alternate years)*

MEGR 6114. Advanced Fluid Mechanics. (3G) Prerequisite: MEGR 4112 or consent of the department. Unified tensorial-theoretical treatment of the transport of mass, momentum, energy and vorticity in fluids. General theorems for inviscid and irrotational flows. Viscous effects, boundary layer theory, nonlinear phenomena, hydrodynamic instability and turbulence with applications. *(On demand)*

MEGR 6120. Bearing Design and Lubrication. (3G) Prerequisite: MEGR 3222 or consent of the department. Hydrodynamic lubrication, fluid film and rolling element bearings, design and control of gas and fluid lubricated bearings. *(On demand)*

MEGR 6121. Mechanism Synthesis. (3G) Prerequisite: MEGR 5121 or consent of the department. Synthesis of coplanar and spatial mechanisms, number and type synthesis, function generator, path generator, optimal synthesis of mechanisms, case studies in optimal design of mechanisms. *(Alternate years)*

MEGR 6123. Mechanical Design. (3G) Prerequisite: MEGR 5141 or consent of the department. Impact loading on critical sections, fatigue consideration, stress concentration, fluctuating stresses, failure analysis, contact stresses, industrial case studies. *(On demand)*

MEGR 6126. Dynamics of Machinery. (3G) Prerequisite: MEGR 3222 or consent of the department. Application of dynamics of machinery, balancing of rigid and flexible rotors. Dynamics of spatial mechanisms. Computer-aided dynamic analysis of machinery. *(On demand)*

MEGR 6141. Theory of Elasticity II. (3G) Prerequisites: MEGR 5141 and MATH 6172. Continuation of MEGR 5141 with additional topics in three-dimensional analyses. Topics include complex variable techniques, variational methods and numerical techniques. *(On demand)*

MEGR 6142. Inelastic Behavior of Materials. (3G) Prerequisite: MEGR 5141 or consent of the department. Introduction to plasticity and linear viscoelasticity. Topics include a study of yield criteria, plastic stress-strain relations, plastic hinge analysis, discrete viscoelastic models, the hereditary integral and selected boundary value problems. *(Alternate years)*

MEGR 6145. Advanced Topics in Dynamics. (3G) Prerequisite: consent of the department. Selected advanced topics in dynamics such as Lagrangian dynamics, vibrations of continuous media, stress wave propagation and motion measurement. *(On demand)*

MEGR 6892. Individualized Study and Projects. (1-6G) Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

MEGR 6991. Graduate Thesis Research. (1-6G) Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(Fall, Spring)*

English

Degree: M.A. *Coordinator:* Mark I. West

MASTER OF ARTS DEGREE IN ENGLISH

The Master of Arts degree program in English is designed to accommodate students seeking a Master of Arts degree with or without graduate certification in teaching. Flexible enough to serve particular needs of the individual, the program can accommodate: those seeking personal enrichment through increased knowledge and understanding; those preparing to pursue a Ph.D. in English or other advanced professional degrees; and those seeking professional advancement in such fields as writing, publishing, or teaching on the primary, secondary, or college levels. Students may pursue a broad spectrum of literature, writing, and language; or they may concentrate in a particular area, such as linguistics, writing, American literature, British literature, juvenile literature, or modern literature. Students may also pursue an interest in teaching English as a second language.

Degree Requirements. The program requires a minimum of 30 semester hours of graduate credit with grades of *A* or *B*. (A course in which a student receives a grade of *C* is not allowable as part of the 30 required hours.) Fifteen semester hours must be in English courses at the 6000 level, open only to graduate students. Of the 30 hours of graduate credit, 27 hours must be in English courses; three hours of electives may be taken either in English or in related work on the graduate level, e.g., in history or education. No more than six hours of ENGL 6890 (Directed Reading) may be applied to the degree without written permission of the Chair of the Department.

Those students who have an "A" teacher's certificate and who wish to obtain a "G" certificate at the completion of the degree must have six hours of graduate credit in Education, three hours of which can be part of the minimum 30 hours for the M.A. degree in English (for a total of 33 hours). Graduate courses in English may be applied toward subject matter requirements for an "A" certificate, but courses so used may not also be applied toward subject matter requirements for a "G" certificate.

English courses for the degree must include the following: at least three hours in language, linguistics, rhetoric or writing; at least three hours in American literature; at least three hours in British literature before 1800; and at least three hours in British literature after 1800 (ENGL 6125 may be used for this). The remaining 60 percent of the degree program may be shaped according to the interests and needs of the individual student.

While a thesis is not required for the degree, students may elect to write one (see course description for ENGL 6996).

Courses beyond 30 semester hours of graduate credit may be required to remove deficiencies or to satisfy requirements for graduate certification, or may be recommended to develop areas of need, to pursue particular interests, or to gain needed experience.

Up to six semester hours of appropriate graduate credit may be accepted for transfer from another accredited institution.

Program Approval. Approval of the program of each student and advice regarding progress toward the degree will be the responsibility of advisers appointed by the Department of English at the time of the student's admission. More detailed information about requirements and procedures can be obtained by contacting the English Department.

Examination. Each student must satisfactorily complete a comprehensive examination (including both written and oral segments) for the degree. The written examination may not be attempted sooner than three weeks after all English courses for the degree are completed.

Awards. The Department gives two graduate awards each spring to graduate students who have completed their degrees: the Ethel Katopodis Award for excellence in the study of English and the Anne R. Newman Award for excellence in the study of English.

Graduate Assistants. A number of graduate assistantships are available each year. Deadline for applications is early spring. Further information is available in the English Department.

Loan Fund. The Anne R. Newman Graduate Student Loan Fund was established in 1979 by graduates of the English Department's M.A. program in honor of teaching excellence in graduate studies by faculty of the Department. It is available to students seeking the Master of Arts degree within the English Department.

ENGLISH (ENGL) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. Additional work will be required of graduate students. See pages 111-117 for complete course descriptions.

ENGL 4002. Women and Literature. (3) (3G)

ENGL 4008. Topics in Advanced Technical Communication. (3) (3G)

ENGL 4112. Medieval British Literature. (3) (3G)

ENGL 4113. British Prose and Poetry of the 16th Century. (3) (3G)

ENGL 4121. The 18th-Century British Novel: Man, Woman, Manners and Morals. (3) (3G)

ENGL 4122. The Victorian Novel. (3) (3G)

ENGL 4123. The Modern British Novel. (3) (3G)

ENGL 4124. Modern Irish Literature. (3) (3G)

ENGL 4131. British Drama to 1600, Excluding Shakespeare. (3) (3G)

ENGL 4132. British Drama From 1600 to 1642, Excluding Shakespeare. (3) (3G)

ENGL 4133. British Drama of Wit and Intrigue, 1660-1780. (3) (3G)

ENGL 4141. Colonial and Early American Literature. (3) (3G)

ENGL 4145. Literature of the American South. (3) (3G)

ENGL 4150. Contemporary Poetry. (3) (3G)

ENGL 4151. Modern Drama. (3) (3G)

ENGL 4152. Modern European Literature. (3) (3G)

ENGL 4153. Contemporary Fiction. (3) (3G)

ENGL 4155. Pan-African Literature. (3) (3G)

ENGL 4161. Modern English Grammar. (3) (3G)

ENGL 4165. Language and Culture. (3) (3G)

ENGL 4166. Comparative Language Studies for Teachers. (3) (3G)

ENGL 4170. Approaches to Teaching English. (1-3) (1-3G)

ENGL 4199. Bibliography and Methodology. (3) (3G)

ENGL 4202. Writing Poetry. (W) (3) (3G)

ENGL 4203. Writing Fiction. (3) (3G)

ENGL 4204. Expository Writing. (3) (3G)

ENGL 4205. Advanced Expository Writing. (3) (3G)

ENGL 4207. Writing Workshop. (3) (3G)

ENGL 4210. Greek and Roman Drama In Translation. (3) (3G)

ENGL 4211. Chaucer. (3) (3G)

ENGL 4221. The Earlier 17th Century. (3) (3G)

ENGL 4251. Literary Criticism Through Arnold. (3) (3G)

ENGL 4252. Modern Literary Criticism. (3) (3G)

ENGL 4260. History of the English Language. (3) (3G)

ENGL 4263. Linguistics and Language Learning. (3) (3G)

ENGL 4290. Advanced Creative Project. (3) (3G)

ENGL 4400. English Composition Practicum. (1-3) (1-3G)

Courses for Graduate Students

ENGL 6062. Topics in Rhetoric. (3G) Examination of and/or research concerning selected issues in rhetorical theory or pedagogy. May be repeated for credit with English Department approval. *(Fall, Spring, Summer) (Evenings)*

ENGL 6070. Topics in English. (3G) Selected topics of literature and language. May be repeated for credit as topics vary and with English Department approval. *(Fall, Spring, Summer) (Evenings)*

ENGL 6102. Interpretations of Literature. (3G) Demonstrations and practice in the various types of literary analysis. *(Alternate years) (Evenings)*

ENGL 6103. The Worlds of Juvenile Literature. (3G) Poetry, folk literature, modern fantasy, realism, and illustrations in books for young children and adolescents. Analysis of the literary qualities which distinguish the classic from the ephemeral through such critical approaches as the historical, the sociological, the psychological and the archetypal. *(Yearly) (Evenings)*

ENGL 6111. Shakespeare's Comedies and Histories. (3G) Source materials, textual problems and stage conventions in selected comedies and history plays illustrating Shakespeare's dramaturgy. *(Alternate years) (Evenings)*

ENGL 6112. Shakespeare's Tragedies. (3G) Source materials, textual problems and stage conventions of the great tragedies, illustrating Shakespeare's dramaturgy. *(Alternate years) (Evenings)*

ENGL 6113. Milton. (3G) The complete poetry and selections from the prose. *(On demand) (Evenings)*

ENGL 6123. The Augustan Age, 1660-1785. (3G) Close reading of Dryden, Pope, Swift, Johnson, and a consideration of other literary figures and trends, in the light of intellectual and historical currents. *(On demand) (Evenings)*

ENGL 6125. The Romantic Era, 1785-1832. (3G) Development of the Romantic movement, with emphasis on the works of Wordsworth, Coleridge and other major poets. *(Alternate years) (Evenings)*

ENGL 6126. The Victorian Era, 1832-1900. (3G) Emphasis on Tennyson, Robert Browning, Arnold, Carlyle, Ruskin, Newman. *(Alternate years) (Evenings)*

ENGL 6141. American Romanticism. (3G) Major writers of the 1830s, 40s, and 50s, including Hawthorne, Melville, Whitman, Emerson, Thoreau, and the Transcendental Movement. *(Alternate years) (Evenings)*

ENGL 6142. American Realism and Naturalism. (3G) Major writers of the two movements before and after the end of the 19th century, including Twain, Howells, James, Crane, Dreiser, Norris. *(Alternate years) (Evenings)*

ENGL 6143. American Modernism. (3G) Six to eight writers of the period since World War I, both prose and poetry. *(Alternate years) (Evenings)*

ENGL 6147. Perspectives in Afro-American Literature. (3G) A survey of Afro-American literature, emphasizing the major authors, those relevant historical and social factors, and those specific literary movements that have influenced the development of Afro-American literature. *(Alternate years) (Evenings)*

ENGL 6161. Introduction to Linguistics. (3G) Introduction to linguistics, its techniques and objectives, descriptive and historical approaches, language families, language and culture. *(Yearly) (Evenings)*

ENGL 6495. Internship in College Teaching. (3G) Prerequisite: ENGL 4400 or 4204. Teaching in one section of the UNCC English Department under supervision of English staff. Students will be accepted for internship only near the end of the degree program and upon approval of the Department. Students will be assigned to teach selected basic courses, and also will participate in periodic conferences and seminars. *(Fall, Spring)*

ENGL 6680. Seminar in British Literature. (3G) *(Yearly) (Evenings)*

ENGL 6685. Seminar in American Literature. (3G) *(Yearly) (Evenings)*

ENGL 6890. Directed Reading. (1-3G) *(Fall, Spring, Summer)*

ENGL 6996. Thesis. (6G) Appropriate research and written exposition of that research, which may or may not be an outgrowth of work done in previous courses. If the thesis is the outgrowth of previous coursework, considerable additional research and exposition must be done beyond that previously undertaken. The proposed thesis work, as well as the final product, will be approved by a committee of three faculty appropriate to the topic, appointed by the Chair of the Department after consultation with the student, on the basis of a written proposal from the student. It is recommended that thesis work not be undertaken until near the end of progress toward the degree. The thesis title is to be shown on the student's final transcript. (A statement of recommendations and requirements for form and procedure is available in the English Department office.) *(Fall, Spring, Summer)*

Geography and Earth Sciences

Degree: M.A. *Coordinator:* G.L. Ingalls

MASTER OF ARTS DEGREE IN GEOGRAPHY

The Master of Arts program in geography offers concentration in three areas of study: (1) Location Analysis; (2) Urban-Regional Analysis and Planning; and (3) Environmental Analysis. The Location Analysis concentration focuses primarily upon a study of the location of commercial and public facilities. Students interested in retail location, industrial development, market area analysis and transportation should pursue coursework in this concentration. Those students interested in planning or a broader perspective of the urban and regional environment should take coursework in the Urban-Regional Analysis and Planning concentration. The Environmental Analysis concentration is aimed toward training the student in the identification and solution of problems of the physical environment which have important consequences for our society.

Degree Requirements. The M.A. program in geography requires a minimum of 36 semester hours of graduate credit. GEOG 6100, 6200, 6201, 7900 and 7901 will be required of all students. Up to 12 hours may be taken in related work. In addition, a minimum of nine semester hours in other 6000-level courses in geography and earth sciences is required.

Six semester hours of coursework may be accepted for transfer from other accredited institutions. Course credit may be earned by examination as well. Transfer credits will not be accepted automatically. In any case, transfer credits, related work or credits earned through examination may not together exceed a total of 12 of the minimum 36 hours required.

Continued Enrollment. The progress of each student will be reviewed every semester by the departmental Graduate Advisory Committee and by the student's adviser. Continued enrollment will require a favorable recommendation by the Committee and the adviser. Prompt removal of any entrance deficiencies will be a major criterion for continued enrollment.

Internships. Most students will work as interns in a public or private agency. This work will take place toward the end of a student's program. The departmental internship director will assist students and faculty advisers in placing the student in an internship position that best relates to the interests of the student. The purpose of the internship is to expose the student to the problems and activities of the community and for the student to have the opportunity to apply geographic theory, technique and knowledge to real life practices. The student intern will work on a specific project under the supervision of both the sponsor and a faculty adviser. The results of the internship project will form the basis for the Individual Research Project report. The internship is not required and will

be arranged only when it is possible to find a sponsoring company or agency that is willing to support research in the area of the student's interest. If a suitable internship cannot be arranged, the student will be expected to execute an independent research project at the level of a thesis in order to satisfy the 7900-7901 course requirement.

Final Examination. Each student must pass a comprehensive examination over both the discipline generally and in defense of the individual research report, as appropriate. The examination may be both written and oral.

GEOGRAPHY (GEOG) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. Additional work will be required of students receiving graduate credit. See pages 129-130 for complete course descriptions.

GEOG 4000. Selected Topics in Geography. (3) (3G)
GEOG 4100. Cartographic Techniques. (3) (3G)
GEOG 4105. Cartographic Design and Map Construction. (3) (3G)
GEOG 4110. Computer Mapping. (3) (3G)
GEOG 4115. Geographic Information Systems. (4) (4G)
GEOG 4155. Retail Location. (3) (3G)
GEOG 4160. The Geography of Transportation Systems. (3) (3G)
GEOG 4205. Internal Structure of the City. (3) (3G)
GEOG 4255. Applied Population Analysis. (3) (3G)
GEOG 4400. Internship in Geography. (3-6) (3-6G)
GEOG 4800. Individual Study in Geography. (1-4) (1-4G)

Courses for Advanced Undergraduate and Graduate Students

GEOG 5040. Transportation Topics. (3) (3G) Prerequisite: consent of department. Investigation of special topics in transportation including: transit systems, mobility and travel patterns, land use/transportation interface, air pollution, and information systems. *(Spring) (Alternate years)*

GEOG 5100. Transportation Policy Formulation. (3) (3G) Prerequisite: consent of department. Structure of transportation policy at federal, state and local levels including policies concerning highway financing and investments, congestion, safety, use and development, energy, transit, and the provision of intercity services. *(Fall) (Alternate years)*

GEOG 5105. Transportation Analysis Methods. (3) (3G) Prerequisite: consent of department; statistics recommended. Procedures for analyzing the operation and performance of transportation systems; includes network planning models, minimum path algorithms and assignments; energy, air pollution, and activity analysis models; and research approaches, data sources, time and activity budgets, infrastructure condition and needs assessment. *(Spring) (Alternate years)*

GEOG 5110. Evaluation of Transportation Impacts. (3) (3G) Prerequisite: consent of department. Methods and case studies for evaluating impacts and benefits of transportation investments including site-level impact analysis; project, corridor and area scales; multi-modal evaluation and examination of mutually exclusive alternatives. *(Fall) (Alternate years)*

Courses for Graduate Students Only

GEOG 6000. Topics in Economic Geography. (3G) Major topics in the location of economic activity. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

GEOG 6005. Topics in Urban Geography. (3G) Major topics in the form and structure of urban areas examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

GEOG 6010. Topics in Political Geography. (3G) Major topics in the spatial aspects of political systems with special emphasis on urban and regional spatial patterns examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(On demand)*

GEOG 6015. Topics in Regional Geography. (3G) Intensive examination of major spatial questions in a given region. May be repeated for credit as topics vary. *(On demand)*

GEOG 6020. Topics in Environmental Studies. (3G) Major topics concerning the physical environment with emphasis on pollution problems in urban areas examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

GEOG 6025. Topics in Physical Geography. (3G) Major topics in physical geography examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

GEOG 6030. Topics in Geographic Techniques. (3G) Cartographic, remote sensing, quantitative techniques or field techniques. May be repeated for credit as topics vary. *(On demand)*

GEOG 6100. Quantitative Analysis in Geography. (3G) Multiple regression, trend surface, factorial analysis, cluster analysis, discriminant analysis. *(Fall) (Evenings)*

GEOG 6101. Store Location Research. (3G) Prerequisite: GEOG 6100 or consent of instructor. Market area analysis and site evaluation methods, including the application of multivariate statistical models, spatial interaction-gravity models, and location-allocation techniques to the retail location analysis task. *(Spring)*

GEOG 6102. Site Feasiblity Analysis. (3G) Prerequisite: consent of instructor. Examination of factors affecting the feasibility of land parcels for commercial and residential development with emphasis on the physical evaluation of a given site, the market support for its intended use and the financial support for the proposed development. *(Fall)*

GEOG 6106. Urban Planning: Theory and Practice. (3G) Alternative planning theories and application of theories in urban planning practices. *(Alternate Years)*

GEOG 6110. Cartographic Preparation and Analysis. (3G) Cartographic design and analysis of qualitative and quantitative data. Emphasis on preparation of maps, figures and charts. Techniques include scribing and various photographic processes. Two three-hour labs each week. *(On demand)*

GEOG 6200. Research Design Fundamentals. (3G) Scientific research and problem solving. Problem identification, bibliographic search, data sources and collection, techniques selection and preparation of reports and proposals. *(Spring) (Evenings)*

GEOG 6201. Analysis and Presentation of Research Data. (3G) The student is required to complete a research project. Topics such as research critiques, preparation and presentation of research reports, and the development of geographic thought are considered. *(Fall) (Evenings)*

GEOG 6600. Seminar in Geography. (3G) Study of the current trends in geographic thought and research methods. *Pass/No Credit* grading. *(On demand)*

GEOG 6800. Directed Problems in Geography. (3G) Individual research into geographic topics. May be repeated one time. *(On demand)*

GEOG 7900-7901. Individual Research Project. (3G, 3G) Individual research report based on directed study of a topic of geographic significance. *Pass/No Credit* grading. *(Fall, Spring)*

EARTH SCIENCES (ESCI) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. Additional work will be required of graduate students. See pages 130-133 for complete course descriptions.

ESCI 4100. Petrology. (4) (4G)

ESCI 4110. Stratigraphy. (4) (4G)

ESCI 4115. Applied Geophysics. (4) (4G)

ESCI 4120. Geologic Mapping and Interpretation. (4) (4G)

ESCI 4125. Geologic Summer Field Camp. (6) (6G)

ESCI 4130. Optical Mineralogy. (4) (4G)

ESCI 4135. Tectonics. (4) (4G)

ESCI 4140. Hydrologic Processes. (4) (4G)

ESCI 4150. Applied Climatology. (3) (3G)

ESSCI 4155. Fluvial Processes. (4) (4G)

ESCI 4400. Internship in Earth Sciences. (3-6) (3-6G)

ESCI 4800. Individual Study in Earth Sciences. (1-4) (1-4G)

Courses for Graduate Students Only

ESCI 6060. Earth Sciences Field Investigations. (1-6G) Prerequisite: consent of instructor. A concentrated field investigation of selected earth sciences topics. Course subject matter, credit hours, location and duration will be specified each time course is offered. May be repeated for credit. *Pass/No Credit* grading. *(On demand)*

ESCI 6650. Workshop in Geography. (4G) Earth Science I. A series of lectures on the subject matter of the atmosphere and hydrosphere with accompanying laboratory sessions. *(On demand)*

ESCI 6651. Workshops in Geology. (4G) Earth Science II. A series of lectures on subject matter of the lithosphere and space science with accompanying laboratory sessions. *(On demand)*

History

Degrees: M.A. *Coordinator:* Lyman Johnson

MASTER OF ARTS DEGREE IN HISTORY

The program for the Master of Arts degree in history is designed to assist individuals to develop the methodological, literary and conceptual skills of the professional historian. Graduates of the program will be able to employ this expertise in a variety of ways, as students in a doctoral program, as professionally oriented history teachers in the secondary schools or as citizens more acutely aware of the historical development of their society.

The Department offers courses in African, American, Asian, European and Latin American history. Information on specific courses and areas of concentration is available from the Graduate Coordinator.

Degree Requirements. The Master of Arts in history requires the completion of a minimum of 30 hours of graduate work with a 3.0 grade point average in all courses taken for graduate credit and with a maximum of two *C's* permitted for continuation in the program.

Candidates must complete:

a) A minimum of 30 hours of approved graduate credit.
b) A minimum of 24 hours of work in history courses approved for graduate work.
c) Of the 24 hours, no more than six may be taken in individually designed reading or research courses.
d) At least 15 of the 24 hours must be taken in seminars, or colloquia, open only to graduate students.
e) All students must complete HIST 6693 Historiography and Methodology with a grade of *B* or better.

Students may elect six hours of graduate work in another field. Candidates seeking Graduate Education Certification may exercise their elective option by undertaking graduate coursework in the College of Education and Allied Professions. Students seeking Graduate Education Certification should solicit the advice of the College of Education and Allied Professions as to appropriate professional education courses. Should the College of Education and Allied Professions require more than six hours for Graduate Education Certification, the additional hours will be added to the total ordinarily completed for the Master of Arts in History.

At least 24 hours of graduate work must be taken in residence. A maximum of six hours may be accepted from other accredited universities.

Candidates must successfully complete a comprehensive written examination in their area of concentration. This examination will be given at or near the completion of coursework. A thesis may be substituted for the written examination.

Candidates must successfully complete a final oral examination, which will include a defense of a formal thesis or a seminar paper selected by the student as illustrative of the student's historical research and writing. All requirements must be completed within six calendar years of the date of original enrollment in the program.

Students are not required to demonstrate knowledge of a foreign language; however, the Department of History assumes that a candidate will be able to use whatever languages are required by the candidate's research interests.

All students in the program are expected to maintain a *B* average in all courses taken. Students whose averages fall below that level will be subject to suspension on recommendation of the Graduate Committee of the Department of History.

Administration. The admission of students and approval of each student's program shall be the responsibility of the Graduate Committee of the Department of History.

The planning and monitoring of each student's program shall be the function of the Graduate Coordinator. The Graduate Coordinator shall advise and assist the student in selecting an Examining Committee.

The Examining Committee shall conduct the student's comprehensive written and final oral examinations. The Examining Committee shall consist of two faculty members from the Department of History, and a third member selected from History or another department.

HISTORY (HIST) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit. See page 141 for complete course descriptions.

HIST 4000. Problems in History. (W) (3) (3G)

HIST 4001. Problems in European History. (W) (3) (3G)

HIST 4002. Problems in Non-Western History. (W) (3) (3G)

HIST 4100. The Nature of Historical Study. (3) (3G)

Courses for Graduate Students Only

HIST 6000. Topics in History. (3G) Intensive treatment of a period or broader survey of a topics, depending on student needs and staff resources. May be repeated for credit as topics vary. *(Fall, Spring) (Evenings)*

HIST 6196. Urban Systems for School Administrators. (3G) Corequisite: POLS 6196. An interdepartmental, team-taught course which consists of a survey of the causes and consequences of urbanization in the United States with particular attention to the urban South. Urbanization is treated as a system linking historic, political, economic, and social factors, particularly since 1945. *(Summer)*

HIST 6200. History Teaching Alliance Institute. (3) Open under special arrangement. *Pass/No Credit* grading only. *(On demand)*

HIST 6210. Early America, 1607-1820. (3G) Development of American institutions from the period of English settlement through the establishment of Republicanism under the Constitution. *(Alternate Years)*

HIST 6215. Jacksonian America, 1820-1848. (3) Examination of important economic, social and political changes including industrialization, the rise of the Democratic Party and reform movements. *(Alternate Years)*

HIST 6220. The Old South. (3G) Evolution of the old South from the 17th century to its collapse in the Civil War and Reconstruction focusing on southern distinctiveness and the tension between democracy and slavery. *(Alternate years)*

HIST 6225. The New South. (3G) Continuity and change in the south from the late-19th century including industrialization, politics, class and race relations, and religion. *(Alternate years)*

HIST 6230. European Social History. (3G) Examination of the views of different writers on class formation, the rise of modern institutions, gender relations and social protest including why certain schools of thought such as modernization or Marxism become popular at particular historical moments. *(Alternate years)*

HIST 6240. U.S. Political and Economic History, 1865-1939. (3G) Emergence of the modern industrial economy and the concomitant development of a large bureaucratic federal government including big business, technological innovation, the labor movement, progressive reform and regulatory policies. *(Alternate years)*

HIST 6250. Comparative Slavery and Race Relations. (3G) Slavery in the new world through its abolition including Indian and African slaves, the slave trade, the economics of slavery, and the impact of slavery on modern race relations in the Americas. *(Alternate years)*

HIST 6265. Cold War America. (3G) Domestic and foreign policy problems accompanying the post-World War II struggle between East and West, Communism and capitalism including McCarthyism, modern technology, foreign aid, Korea, Vietnam, civil rights, gender roles and natural resources. *(Alternate years)*

HIST 6601. Graduate Colloquium. (3G) A colloquium focused on a theme or period. Assigned readings, short papers and reports directed toward developing research and writing skills. May be repeated for credit. *(Fall, Spring) (Evenings)*

HIST 6693. Historiography and Methodology. (3G) A study of historians and their philosophical and methodological approaches. Required of all M.A. candidates. *(Alternate years) (Evenings)*

HIST 6698. Introduction to Historical Writing. (3G) Seminar in the process of thesis writing including thesis proposals, primary source materials, rules of evidence, structure of an argument, and organization of the thesis and its chapters. May be repeated for credit. *(On Demand)*

HIST 6894. Readings in History. (3G) Prerequisite: prior written consent of instructor. Coverage of historical periods or topics through individually designed reading programs; scheduled conference with a staff member. May be repeated for credit. *(Fall, Spring) (Evenings)*

HIST 6901. Directed Readings/Research. (3G) Prerequisite: prior written consent of instructor and graduate coordinator. Graduate students will meet individually or in small groups with the instructor and will be assigned readings and/or research on a theme which relates to the lectures of an undergraduate class. Attendance at the lectures is a course requirement. May be repeated for credit. *(Fall, Spring, Summer)*

HIST 6997. Directed Research. (3G) Prerequisite: prior written consent of instructor. Investigation of a historical problem culminating in a research paper. May be repeated for credit. *(On demand)*

HIST 6999. Thesis. (3G or 6G) May be repeated by permission, if taken for three hours credit. Six hours of Thesis may be taken during a single semester. Appropriate research and written exposition of that research is required. *(On demand)*

Mathematics
Mathematics Education

Degrees: M.A., M.S.

Mathematics Coordinator: Douglas S. Shafer
Mathematics Education Coordinator: Mary Kim Prichard

MASTER OF ARTS DEGREE IN MATHEMATICS

The Master of Arts degree in Mathematics is designed both to provide advanced skills and knowledge for those seeking either positions in industry or in government, or teaching positions at the junior college or community college level, and to provide professional development to those currently in such positions. Graduates of the program will also be well prepared to enter directly into at least the second year of a Ph.D. program in mathematics, applied mathematics or statistics at other institutions, depending on the particular courses selected.

Degree Requirements. The Master of Arts degree in Mathematics requires successful completion of a minimum of 30 semester hours of graduate work approved by the Department Graduate Committee.

The Department groups the courses which may be applied toward the M.A. in Mathematics into five broad areas: Applied Mathematics, Probability-Statistics, Algebra-Topology, Analysis, and Computer Science. Each candidate must demonstrate, to the satisfaction of the Graduate Committee, competence on general knowledge in at least three of these areas. This may be accomplished by means of either (a) successful performance on a written comprehensive examination or (b) successful completion of courses in these areas.

Regularly offered courses which are available for graduate credit in the M.A. program are as follows:

Group I—Applied Mathematics: OPRS 4111, 4112, 4113, 4114, MATH 4165, 4176, 5172, 7147, 7171, 7172, 7176, 7177.

Group II—Probability-Statistics: STAT 5123, 5124, 5125, 7123, 7127; MATH/STAT 7120, 7121; MATH/STAT/OPRS 7125.

Group III—Algebra-Topology: MATH 4163, 4164, 4181, 7163.

Group IV—Analysis: MATH 5143, 5144, 7141, 7143.

Group V—Computer Science: All 5000- and 6000-level Computer Science courses.

Each candidate must complete:

(a) MATH 5143 and MATH 5144 or their equivalents.

(b) At least 15 hours in courses numbered above 7000. (With the approval of the Department Graduate Committee, at most one three-hour 6000-level Group V course of sufficient theoretical nature may be applied toward the 15 hours.)

(c) At least one course each from two of the groups I, II, III, V.

Each candidate must perform satisfactorily on an oral comprehensive examination over the candidate's program of study.

Thesis. Completion of a satisfactory thesis is optional. With the approval of the Department Graduate Committee, a candidate may receive at most six of the 15 hours required at the 7000 level for the writing of a master's thesis. Subject to the approval by the Department Graduate Committee, this thesis may be either original work, work of an expository nature, or the mathematical formulation and solution of a particular industrial or business problem suggested by the career interests of the student. A candidate may not receive more than a total of six of the hours required at the 7000 level for course and thesis work in computer science. If the thesis option is elected, the candidate will be required to defend his/her thesis in an oral examination.

MASTER OF ARTS DEGREE IN MATHEMATICS EDUCATION

The Master of Arts degree in Mathematics Education is designed primarily for secondary school teachers interested in professional growth and graduate certification in mathematics. Emphasis in this program is given to developing depth and breadth in mathematics appropriate to the role of the teacher.

Each candidate must complete:

(a) 18 hours of mathematics courses approved for graduate credit. At least nine of these hours must be in courses numbered 6000 or above.

(b) Six hours of graduate courses approved for this program by the College of Education and Allied Professions. (EDUC 6101 and EDUC 6110 are recommended.)

(c) At least six additional hours of courses approved for graduate credit. These may be in mathematics, mathematics education or in a related area approved by the student's adviser.

Thirty semester hours of graduate credit or the equivalent are the minimum required for the degree and for graduate certification in mathematics. Of these, 15 hours must be in courses numbered 6000 or above. Programs of study beyond these 30 hours may be required to remove deficiencies in undergraduate programs or to develop areas of need, interest, or desired experience.

Approval of the program of each student and provision of advice regarding progress toward the degree are the responsibility of an adviser appointed at the time of admission by the Department of Mathematics.

Each student must pass a comprehensive examination, including an oral examination, on the overall work presented for the degree.

MASTER OF SCIENCE IN APPLIED MATHEMATICS

The Master of Science in Applied Mathematics is designed to develop critical thinking and intuition, and to provide advanced work in the techniques of mathematical analysis and their application to the problems of industry and technology. These skills will include those necessary for: dealing with the problems encountered in industry, business, and governmental work; holding leadership positions in industrial or governmental work; teaching Applied Mathematics on the undergraduate or community college level; and further study in Applied Mathematics leading to the Ph.D. degree.

Degree Requirements. A candidate for the Master of Science degree in Applied Mathematics must complete a minimum of 30 semester hours of graduate work approved by the Department graduate committee. These shall include:

i. (Core Requirements - 24 semester hours)

(1) MATH 4165, 5143, 5144, and 7691.

(2) One elective in Numerical Analysis selected from: MATH 4176 or 5172.

(3) One elective in Advanced Analysis selected from: MATH 7141 or 7143.

(4) Two electives in Advanced Applied Mathematics selected from: MATH 7171, 7172, 7176, 7177.

ii. (Electives - 6 semester hours)

(1) One advanced elective from: MATH 7141, 7143, 7147;, 7171, 7172, 7176, 7177, 7993.

(2) One elective in Mathematics or a suitable area of application to be selected with the approval of the student's adviser. Suggested electives include OPRS 4113, STAT 5123, CSCI 5131, MEGR 4111, 4112, 4141, 6113 and 6141.

iii. (Research Seminar)

All candidates for the Master of Science degree in Applied Mathematics are required to complete three hours of MATH 7691 in which they must complete an independent project under the supervision of a member of the graduate faculty. The project could involve a specific application to a concrete problem of techniques identified in the literature or studied in other courses. All projects are subject to prior approval of the Department committee and must be successfully defended before a committee of three graduate faculty members appointed by the Department graduate committee.

iv. (Comprehensive Examination)

Each candidate for the Master of Science degree in Applied Mathematics must perform satisfactorily on a final comprehensive examination. This examination will be set and administered by a committee appointed by the Department graduate committee. It may be either in written or oral form, and it will cover those areas of study and/or research as deemed appropriate by the committee.

Thesis. A student may choose to expand the work begun in MATH 7691 into a master's thesis by registering for three hours of MATH 7893 to fulfill the advanced elective requirement of ii (2) previous page. This thesis option affords the student the opportunity to do professional/scholarly work demonstrating proficiency in the area of Applied Mathematics.

MATHEMATICS (MATH) COURSE DESCRIPTIONS

Following are courses primarily for advanced undergraduates which carry graduate credit. See pages 148-149 for complete course descriptions.

MATH 4000. Topics in Foundations or History of Mathematics. (2-3) (2-3G)

MATH 4020. Topics in Probability and Statistics. (2-3) (2-3G)

MATH 4040. Topics in Analysis. (2-3) (2-3G)

MATH 4060. Topics in Algebra. (2-3) (2-3G)

MATH 4070. Topics in Applied Mathematics. (2-3) (2-3G)

MATH 4080. Topics in Geometry and Topology. (3) (3G)

MATH 4109. History of Mathematical Thought. (3) (3G)

MATH 4161. Number Theory. (3) (3G)

MATH 4163. Modern Algebra. (3) (3G)

MATH 4164. Abstract Linear Algebra. (3) (3G)

MATH 4165. Numerical Linear Algebra. (3) (3G)

MATH 4176. Numerical Methods in Partial Differential Equations. (3) (3G)

MATH 4181. Introduction to Topology. (3) (3G)

MATH 4691. Seminar. (1-6) (1-6G)

MATH 4692. Seminar. (1-6) (1-6G)

OPRS 4010. Topics in Decision Mathematics. (2-3) (2-3G)

OPRS 4111. Linear Programming. (3) (3G)

OPRS 4112. Non-linear Programming. (3) (3G)

OPRS 4113. Game Theory. (3) (3G)

OPRS 4114. Dynamic Programming. (3) (3G)

Courses for Graduate Students and Advanced Undergraduates

MATH 5122. Statistical Techniques. (3) (3G) Prerequisite: consent of the Department. Probability models, random variables, large sample statistics, inferential statistics. (Credit toward mathematics major given only for students seeking secondary certification. Credit for mathematics major not given for both MATH 5122 and 3122. Not approved for the M.A. degree in mathematics.) *(Spring) (Evenings)*

MATH 5143. Analysis I. (3) (3G) Prerequisite: MATH 3141 with a grade of *B* or better, or consent of the Department. First course of a two-semester sequence providing a rigorous treatment of continuity, differentiability and integration of functions of one and several real variables. *(Fall)*

MATH 5144. Analysis II. (3) (3G) Prerequisite: MATH 5143 with a grade of *B* or better or consent of the Department. Continuation of MATH 5143. *(Spring)*

MATH 5172. The Finite Element Method. (3) (3G) Prerequisites: CSCI 1100, MATH 2141, 2164, and 2171—all with a grade of *C* or better, or consent of the Department. Boundary value problems and their variational form. Finite element basis functions, computational techniques, isoparametric elements and curved boundaries, alternate methods, singular problems, eigenvalue problems. Some practical experience with an F.E.M. program and graphical output. *(Spring) (Alternate years)*

Courses for Graduate Students Only

MATH 6004. Topics in Analysis. (3G) Prerequisite: MATH 6101 or consent of the Department. Topics in analysis selected so as to complement regular course offerings in this area of mathematics. May be repeated for credit with the consent of the Department. *(On demand)*

MATH 6008. Topics in Geometry and Topology. (3G) Prerequisite: consent of the Department. Topics selected from Euclidean geometry, non-Euclidean geometry, projective geometry, differential geometry, point-set topology, algebraic topology. May be repeated for credit with approval of the Department. *(On demand)*

MATH 6100. Foundations of Mathematics. (3G) Prerequisite: consent of the Department. Logic, sets and axiomatic systems. *(Fall, Summer) (Alternate Years)*

MATH 6101. Foundations of Real Analysis. (3G) Prerequisite: MATH 6100 or consent of the Department. Axiomatic and historical development of the real and complex numbers; rigorous development of limits and continuity of functions, intermediate and extreme value theorems. *(Fall) (Alternate years)*

MATH 6102. Calculus from an Advanced Viewpoint. (3G) Prerequisite: MATH 6101 or its equivalent. A continuation of MATH 6101. A rigorous approach to differentiation and integration of functions of one real variable. *(Spring) (Alternate years)*

MATH 6103. Computer Techniques and Numerical Methods. (3G) Prerequisite: MATH 6101 or consent of the Department. Computer systems, programming, and the computer solution of numerical problems. *(Summer) (Alternate years)*

MATH 6105. Problem Solving in Discrete Mathematics. (3G) Prerequisite: consent of the department. Propositional and predicate calculus, counting techniques, partially ordered sets, lattices, graphs and trees. *(Alternate years)*

MATH 6106. Modern Algebra. (3G) Prerequisite: MATH 3163 or its equivalent or consent of the Department. Topics chosen from group theory, rings and ideals, integral domains, fields and elementary Galois theory. *(Summer) (Alternate years)*

MATH 6107. Linear Algebra. (3) Prerequisite: MATH 2164 or its equivalent or consent of the Department. Systems of linear equations, matrices, vector spaces, linear transformations, determinants, canonical forms of matrices, inner products. *(Summer) (Alternate years)*

MATH 6118. Non-Euclidean Geometry. (3) Prerequisite: consent of the Department. History of Euclid's Fifth Postulate and attempts to prove it; work of Gauss, Bolyai, Lobachevsky and others; systematic development of hyperbolic geometry; relative consistency of hyperbolic geometry; relative consistency of hyperbolic and Euclidean geometries. *(Alternate years)*

MATH 6171. Advanced Applied Mathematics I. (3G) Prerequisites: MATH 2141 and 2171 with grades of *C* or better or consent of the Department. Power series solutions of ordinary differential equations, vector calculus, line and surface integrals, partial differential equations and Fourier integrals. *(Fall) (Evenings)*

MATH 6172. Advanced Applied Mathematics II. (3G) Prerequisites: MATH 2141 and 2171 with grades of *C* or better or consent of the Department. Complex analysis; probability and statistics. *(Spring) (Evenings)*

MATH 6609. Seminar. (1-2-3G) Prerequisite: consent of the Department. A series of regularly scheduled meetings in which each student will present one or more topics selected by the instructor. May be repeated for credit with approval of the Department. *(On demand)*

MATH 7050. Topics in Mathematics. (2-3G) Prerequisite: consent of the Department. Topics chosen from such fields as algebra, topology, analysis, applied mathematics, differential geometry, mathematical physics, graph theory, probability, statistics. May be repeated for credit as topics vary and with the approval of the Department. *(On demand)*

MATH 7120. Probability Theory. (3G) Prerequisites: MATH 5143 and 3122 or consent of the Department. Topics include probability spaces, probability measures, sigma-algebras, characteristic functions, sequences of random variables, law of large numbers, general forms of the Central Limit Theorem. *(Fall) (Alternate years)*

MATH 7121. Statistics. (3G) Prerequisite: MATH 7120 or consent of the Department. A survey of frequently used statistical techniques selected from: estimation theory and hypothesis testing; parametric and nonparametric techniques in the one and two sample location and dispersion problems; goodness of fit criterion and tests for independence; measures of association, regression techniques, multi-sample inferential techniques. *(Spring) (Alternate years)*

MATH 7125. Stochastic Processes. (3G) Prerequisites: MATH 3122 or 5143 or consent of the Department. Basic ideas in the study of stochastic processes. Topics will be selected from: discrete and continuous time Markov processes, stationary and renewal processes, applications to queuing theory, reliability theory, stochastic differential equations, time-series analysis, filtering and stochastic control theory. *(Spring) (Alternate years)*

MATH 7141. Complex Analysis I. (3G) Prerequisite: MATH 5143 or consent of the Department. Holomorphic functions, complex integration, residues, entire and meromorphic functions, conformal mapping, harmonic functions. *(Spring) (Alternate years)*

MATH 7142. Complex Analysis II. (3G) Prerequisite: MATH 7141. A continuation of MATH 7141. *(On demand)*

MATH 7143. Real Analysis I. (3G) Prerequisite: MATH 5144 or consent of the Department. Lebesgue integration on the real line, L^p spaces, introduction to general measure and integration theory. *(Summer) (Alternate years)*

MATH 7144. Real Analysis II. (3G) Prerequisite: MATH 7143. A continuation of MATH 7143. *(On demand)*

MATH 7147. Applied Functional Analysis. (3G) Prerequisite: MATH 5144. Introduction to functional analysis and its applications to such areas as linear and non-linear differential equations, integral equations, and control theory. Topics chosen from Banach spaces, operators, the Hahn-Banach, open mapping and closed graph theorems, Sobolev spaces, spectral theory, operators in Hilbert space. *(Summer) (Alternate years)*

MATH 7163. Modern Algebra I. (3G) Prerequisite: MATH 4163 and 4164 or consent of the Department. Topics will be selected from Galois theory, commutative algebra, modules, ring theory, homological algebra. *(Fall) (Alternate years)*

MATH 7164. Modern Algebra II. (3G) Prerequisite: MATH 7163. A continuation of MATH 7163. *(On demand)*

MATH 7171. Methods of Applied Mathematics. (3G) Prerequisite: MATH 2171 and 3171 or consent of the Department. Selected topics involving applications of analysis such as variational methods in optimization, linear integral equations, vibration and eigenvalue problems, and asymptotic expansions. *(Fall) (Alternate years)*

MATH 7172. Partial Differential Equations. (3G) Prerequisite: MATH 5144. Harmonic functions, mean-value theorem, maximum principle, Green's representation for the solution of the Dirichlet problem for Laplace's equation; Poisson's equations and the Poisson formula; statement and proof of the existence theorem for general second-order elliptic operators, generalized maximum principles; Sobolev spaces. Evolution equations involving elliptic operators, such as the heat or wave equations, may also be introduced. *(Spring) (Alternate years)*

MATH 7176. Advanced Numerical Analysis. (3G) Prerequisites: MATH 2164, 2171 and 4176. A selection of topics from such areas as iterative methods of solving linear and nonlinear systems of equations, approximation theory, splines, and finite element methods of partial differential equations. *(Spring) (Alternate years)*

MATH 7177. Applied Optimal Control. (3G) Prerequisites: MATH 5143 or consent of the Department. Examples of control systems and optimization problems, optimal control of discrete-time system, solutions of the general discrete-time optimization problem, optimal control of continuous-time systems, the calculus of variations, solution of the general continuous optimization problem, applications of the Pontryagin Maximum Principle, Bang-bang control, and Dynamic programming. Controllability and differential games may also be introduced. *(Spring) (Alternate years)*

MATH 7181. Topology I. (3G) Prerequisite: consent of the Department. Topological spaces, continuous functions, connectedness, compactness, and metrizability, and further topics from point-set, geometric or algebraic topology. *(On demand)*

MATH 7182. Topology II. (3G) Prerequisite: MATH 7181. A continuation of MATH 7181. *(On demand)*

MATH 7691. Research Seminar. (3G) Prerequisite: consent of the Department. A seminar in which independent study may be pursued by the student or group of students under the direction of a professor. *(On demand)*

MATH 7692. Research Seminar. (3G) Prerequisite: consent of the Department. A continuation of MATH 7691. *(On demand)*

MATH 7893. Thesis. (3G) Prerequisite: Consent of the Department. Subject to the approval of the Department Graduate Committee, the thesis may be original work, work of an expository nature, or the mathematical formulation and solution of a particular industrial or business problem suggested by the career interest of the student. The thesis must be defended in an oral presentation. May be repeated for credit with the consent of the Department.

OPERATIONS RESEARCH (OPRS) COURSE DESCRIPTIONS

OPRS 6101. Introduction to Operations Research. (3G) Prerequisite: STAT 3122. Operations Research approach: modeling, constraints, objective and criterion. The problem of multiple criteria, optimization, model validation. The team approach. Systems design. Examples, or methodology: mathematical programming, optimum seeking, simulation, gaming, heuristic programming. Examples, or applications: theory of inventory, economic ordering under deterministic and stochastic demand. The production smoothing problem, linear and quadratic cost functions. Waiting line problems: single and multiple servers with Poisson input and output. The theory of games for two-person competitive situations. Project management through probabilistic activity networks and deterministic activity network (CPM-PERT). *(Fall)*

OPRS 7125. Stochastic Processes. (3G) Same as MATH 7125.

STATISTICS (STAT) COURSE DESCRIPTIONS

STAT 5123. Applied Statistics I. (3) (3G) Prerequisites: MATH 2164 with a grade of *C* or better and junior standing; or consent of the Department. Review of stochastic variables and probability distributions, methods of estimating a parameter, hypothesis testing, confidence intervals, contingency tables; linear and multiple regression, time series analysis. *(Fall) (Evenings) (Alternate years)*

STAT 5124. Applied Statistics II. (3) (3G) Prerequisite: STAT 5123. One way analysis of variance; multiway classificiation; randomized complete-block designs, nested or hierarchical designs, Latin squares, factorial experiments; design of experiments. *(Spring) (Evenings) (Alternate years)*

STAT 5125. Nonparametric Statistical Methods. (3) (3G) Prerequisite: MATH 2121 or 3122 or 4123. An introduction to nonparametric statistical techniques for analysis of real life data, including the Wilcoxon signed rank test, the Mann-Whitney U Statistic, the Druskal-Wallis one way A NOVA test. *(Fall) (Alternate years)*

STAT 7120. Probability Theory. (3G) Same as MATH 7120.

STAT 7121. Statistics. (3G) Same as MATH 7120.

STAT 7123. Time Series Analysis. (3G) Prerequisites: MATH 2164 and 3123 or consent of the Department. A selection of topics from the following list: stationary and non-stationary stochastic processes, classification of time series occurring in practice, general autoregressive-moving average processes, estimation of the parameter, the spectrum, cross correlation function and cross spectrum, estimation of cross spectra, estimation of frequency response functions, multivariate spectral analysis. *(Fall) (Alternate years)*

STAT 7125. Stochastic Processes. (3G) Same as MATH 7125.

STAT 7127. Linear Statistical Models. (3G) Prerequisites: MATH 2164 and 3123 or consent of the Department. A selection of topics from the following list: distribution and quadratic forms, regression, dummy variables, models not of full rank, the two-way crossed classification, time series. *(Fall) (Alternate years)*

MATHEMATICS EDUCATION (MAED) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

MAED 5000. Topics in Mathematics Education, Early Childhood. (1-6) (1-6G) Prerequisite: consent of the Department. *(On demand)*

MAED 5040. Topics in Mathematics Education, Intermediate. (1-6) (1-6G) Prerequisite: consent of the Department. *(On demand)*

MAED 5070. Topics in Mathematics Education, Secondary. (1-6) (1-6G) Prerequisite: consent of the Department. *(On demand)*

MAED 5101. Arithmetic in the School. (3) (3G) Prerequisite: MATH 1101 or equivalent. A study of the number systems with emphasis placed upon the basic concepts and meanings, properties of addition, multiplication, inverses, systems of numeration and number line appropriate for each grade.(Does not count toward a major in mathematics. Open only to transfer students who have completed six semester hours of mathematics at another university.) *(On demand)*

MAED 5104. Microcomputing for Teachers. (3) (3G) Prerequisites: working knowledge of college algebra and trigonometry, and consent of the Department. Introduction to basic computer concepts, to microcomputer systems, to the design and development of programs to assist instruction in mathematics and computer sciences. A programming language such as BASIC or LOGO will be used. Each student will integrate skills learned by selecting, designing and developing a specific project. (No prior experience with computer programming required.) *(Spring) (Evenings)*

MAED 5105. Geometry for Teachers. (3) (3G) Prerequisite: MAED 2102 or 5101 or consent of the Department. A study of the foundations of Euclidean geometry and a brief treatment of non-Euclidean geometry. Emphasis on learning activities and teaching techniques for teachers of mathematics K-12. *(Spring) (Evenings)*

MAED 5141. Mathematics for the Intermediate School Teacher. (3) (3G) Prerequisite: MAED 2102 or consent of the Department. A study of the algebraic properties of the real numbers; functions, equations, inequalities and their graphs, activities and applications related to upper elementary and intermediate grades. *(Fall) (Evenings)*

MAED 5171. Mathematics for the Secondary School Teacher. (3) (3G) Prerequisite: MAED 2102 or mathematics major with declared option for Secondary School Teacher Certification or consent of the Department. A study of secondary school mathematics and its relation to the curriculum K-12. Strategies, techniques and activities in teaching mathematics. *(Fall) (Evenings)*

MAED 6104. Programming in BASIC and LOGO. (3G) Prerequisite: consent of the department. Introduction to Basic and LOGO with emphasis on designing and developing programs to enhance instruction in problem solving. Students will develop a specific curriculum project using acquire programming concepts and techniques. (Not approved for the M.A. degree in Mathematics Education.) *(Yearly)*

Nursing

Degree: M.S.N.

MASTER OF SCIENCE IN NURSING

The Master of Science in Nursing degree is designed to prepare the nurse for advanced practice in a specialized area of nursing through assumption of a primary role of teacher, clinical specialist, nurse anesthetist, or administrator. The student selects one of the following areas of specialization: Adult Health Nursing, Parent-Child Health Nursing, Mental Health Nursing or Nursing Administration.

Master's level study includes the following:

1. Examination and testing of theories from nursing and other disciplines relevant to a specialized area of nursing.

2. Application of systematic methodologies to the identification and investigation of phenomena of concern to nursing.

3. Evaluation of the efficiency and effectiveness of programs, processes and procedures utilized in nursing.

4. Integration of clinical and role competencies into nursing practice and leadership.

Degree Requirements. The Master of Science in Nursing degree program requires completion of 38 semester hours of graduate credit (70 hours for nurse anesthesia). Requirements for the program may be completed in four semesters and one summer session of full-time study or spread over a longer period of part-time study.

In addition to coursework, each student must prepare and present a thesis or a special project acceptable to the student's advisory committee.

Up to six semester hours of graduate transfer credit may be accepted from another accredited institution upon approval of the student's adviser, the graduate program Coordinator and the Dean of the Graduate School. Other coursework should be taken in residency. All coursework, including accepted transfer credits, must be completed within a six-year period.

Program Components. Following is a description of the components of the curriculum. Additional information may be obtained from the College of Nursing. The program emphasizes flexibility within a basic structure so that students may achieve varying professional goals.

The nursing component represents the major portion of requirements for the master's degree and includes five types of courses: core, research and thesis, area of specialization, functional area, and cognate support.

I. Core Area of Study. Students must complete six credit hours of core courses, which provide an introduction to nursing theory, concept analysis, in-depth study of contemporary health issues and the analysis of societal forces and systems related to the practice of nursing. Required courses are: NURS 6101 and 6115.

II. Research and Thesis Component. The thesis or special project demonstrates the capacity for research, originality of thought and facility in organizing data. A total of 9 credit hours of coursework is required, including: NURS 6160, 6962, and a graduate-level statistics course.

III. Specialization Area of Study. The specialization courses emphasize utilization of theoretical bases for nursing practice. Students select an area of specialization to prepare for activities in client care, consultation, community activities, and planning policies and change. Required courses by area of specialization are: **Adult Health Nursing**—NURS 6120 and 6125; **Mental Health Nursing**—NURS 6130 and 6135; **Parent-Child Health Nursing**—NURS 6140 and 6145; **Nursing Administration**—NURS 6170, 6171, 6172 and 6488. Total credit hours accrued by completing the above requirements are eight credits for each specialization area except for Nursing Administration, which requires 14 credit hours.

IV. Functional Area of Study. Students who select a specialization area in Adult Health Nursing, Mental Health Nursing, or Parent-Child Health Nursing must select a functional area of study focusing on preparation for teaching, clinical specialist, nurse anesthesia (open only to eligible students in Adult Health) or management roles. Nine credit hours of coursework are required, including the following nursing courses by functional area: **Education**—NURS 6480; **Clinical Specialist**—NURS 6484; **Management**—NURS 6482 (Nursing Administration students have no required coursework in this area); **Anesthesia** (27 semester hours of coursework plus clinical residency.)

V. Cognate Support Component. Selected cognate courses from nursing, biological, behavioral, social and physical sciences are prerequisites for the specialization and functional nursing courses. Six credit hours of cognate courses are required for all concentrations except Nursing Administration, which requires nine credit hours (MBAD 6192 or POLS 6128, MBAD 6163 or POLS 6134, MBAD 6161 or POLS 6113). Courses are chosen by students and faculty advisers to support the program of study.

NURSING (NURS) COURSE DESCRIPTIONS

NURS 4090. Topics in Nursing. (3) (3G) Prerequisite: permission of instructor. Topics to be chosen from the specialties of nursing, including both clinical and theoretical foci. *(On demand)*

NURS 5090. Selected Topics in Nursing. (3) (3G) Prerequisite: permission of instructor. Topics to be chosen from the specialties of nursing. May be repeated for credit as topics vary. No more than six hours of topics and/or independent study course credit in nursing may be applied toward degree requirements. *(Fall, Spring)*

NURS 5170. Computer Applications in Nursing. (3) (3G) A study of the use of computers in the field of nursing. Emphasis on analysis and application of computer systems in nursing administration, nursing education and nursing research. *(Yearly)*

NURS 6101. Nursing Theory. (3G) Analysis of various theories underlying nursing practice with emphasis on assisting the learner to utilize theory analysis as a basis for developing nursing practice, education or research. *(Fall)*

NURS 6110. Perspectives in Nursing. (2G) Analysis of the societal forces, issues and trends having an impact on nursing and health care, including a critical examination of strategies which accelerate or impede the change process. *(On Demand)*

NURS 6115. Health Planning in the Health Care System. (3G) The process of health care planning, including analysis of the implications of federal, state and local legislation on health care and nursing. Consideration of roles and participation of nursing in political and organizational decisions involving health care. *(Spring)*

NURS 6120. Adult Health Nursing I. (4G) Prerequisites: BIOL 4273 or equivalent; physical assessment course. Examination of scientific data relevant to adult health and illness with emphasis on the utilization of multidisciplinary theory in the assessment and implementation of nursing practice. Autonomous nurse behavior in response to health-illness events is stressed. *(Spring)*

NURS 6125. Adult Health Nursing II. (4G) Prerequisite: NURS 6120. Continuation of NURS 6120. *(Fall)*

NURS 6130. Mental Health Nursing I. (4G) Examination and application of the therapeutic process of mental health nursing with emphasis on application of theories from psychiatric, behavioral, cultural sciences and nursing to select clinical experiences. Theoretical seminar, clinical conference, clinical experience and supervision provide opportunities for development of the roles of the nurse as a group leader and therapist. *(Spring)*

NURS 6135. Mental Health Nursing II. (4G) Prerequisite: NURS 6130. Continuation of NURS 6130 with focus on defining the role of nursing in community mental health settings. *(Fall)*

NURS 6140. Parent and Child Health Nursing I. (4G) Prerequisites: BIOL 4273 or equivalent; physical assessment course. Assessment and management of clients of childbearing and childrearing families focusing on the theoretical concepts in parenting, family development, nurturing and human sexuality with emphasis on the development and behavior of children as biopsychosocial beings in the context of the illness-wellness continuum. *(Spring)*

NURS 6145. Parent and Child Health Nursing II. (4G) Prerequisite: NURS 6150. Continuation of NURS 6150 with focus on acute, complex care problems of children or pregnant women and their families. *(Fall)*

NURS 6151. Principles of Anesthesia I. (3G) Prerequisite: Permission of instructor. Overview of the principles, techniques and equipment necessary for the administration of anesthesia for the general surgical client. *(Fall)*

NURS 6152. Principles of Anesthesia II. (3G) Prerequisite: NURS 6151. Specific techniques of nurse anesthesia practice for selected clients. *(Spring)*

NURS 6153. Principles of Anesthesia III. (2G) Prerequisite: NURS 6152. Advanced techniques of nurse anesthesia practice for selected clients. *(Fall)*

NURS 6154. Nursing Anesthesia Pharmacology I. (4G) Prerequisite: Permission of Instructor. Introduction to the pharmacology of anesthetic drugs and adjunctive agents, including general pharmacological principles, pharmacokinetics and pharmacodynamics. *(Fall)*

NURS 6155. Nursing Anesthesia Pharmacology II. (4G) Prerequisite: NURS 6154. Continuation of Pharmacology I with emphasis on the clinical use of anesthetic agents and adjunctive drugs. *(Spring)*

NURS 6156. Applied Physics and Chemistry in Nursing Anesthesia. (3G) Prerequisite: Permission of Instructor. Basic principles of laws of physics and chemistry as they apply to the clinical practice of nurse anesthesia. *(Spring)*

NURS 6157. Applied Pathophysiology I in Nursing Anesthesia. (3G) Prerequisite or corequisite: BIOL 4273 and permission of instructor. Pathophysiology of the respiratory and nervous systems with emphasis on their anesthetic implications. *(Spring)*

NURS 6158. Applied Pathophysiology II in Nursing Anesthesia. (3G) Prerequisite: NURS 6157. Pathophysiology of the endocrine, excretory and cardiovascular systems with emphasis on the anesthetic implications. *(Summer)*

NURS 6159. Professional Aspects. (1G) Prerequisite: permission of instructor. Overview of the legal aspects regarding the practice of nurse anestheisa and information about the American Association of Nurse Anesthetists, including its history and the Councils on Accreditation, Certification and Practice. *(Summer)*

NURS 6160. Research Process in Nursing. (3G) Application of inquiry methods to nursing problems. Emphasis is on utilizing critical analysis of research methods applicable to nursing problems. *(Fall, Summer)*

NURS 6170. Organization and Administration in Nursing Services. (3G) Prerequisites: NURS 6101 and MBAD 6161 or permission of instructor. Provides a knowledge base from which to conceptualize, investigate and understand complex organizations and management processes with emphasis on nursing as a major component of the health care delivery system. *(Fall)*

NURS 6171. Nursing Management of Resources in Health Care Organizations. (3G) Prerequisites: NURS 6101 and 6170 or permission of instructor. Examination of critical nursing management issues associated with human, fiscal and material resources in a variety of health care settings. Study of nurse staffing, utilization, patient acuity and quality assurance components conducive to the professional practice of nursing using a systems approach emphasizing hospital information management. *(Spring)*

NURS 6172. Financial Nursing Management in Health Care Organizations. (3G) Prerequisites or corequisite: NURS 6171 or permission of instructor. Concepts of financial management in health care organizations as context for the planning and control of the nursing budget. Strategies for successful budget presentation, defense and negotiation. *(Fall)*

NURS 6480. Teaching Practicum. (3G) Prerequisites: completion of two related courses and at least one advanced clinical course. Individualized teaching experience with a faculty preceptor in both clinical and classroom settings, emphasizing application of teaching strategies, theories of learning, and principles of evaluation. *(Spring)*

NURS 6482. Management Practicum. (3G) Prerequisites: completion of NURS 6170, 6171 or 6172 and advanced clinical courses. Guided management practicum to participate with individuals and groups functioning in middle management roles in nursing services. Emphasis is placed on conceptual, human and technical skills in management. *(Spring)*

NURS 6484. Clinical Specialist Practicum. (3G) Prerequisites: completion of two related courses and advanced clinical courses. Guided seminar and practicum focusing upon the role of the clinical specialist in the management of patient care. Emphasis is placed upon the use of theory, as well as political, organizational and professional processes in role development. *(Fall)*

NURS 6485. Nurse Anesthesia Clinical Residency I. (3G) Prerequisites: NURS 6101, 6110, 6153, 6155, 6156, 6158, 6159, 6160, and BIOL 4273. Clinical application of didactic material from the nurse anesthesia curriculum through beginning level practice in the role of a nurse anesthetist. Conferences during the clinical residency provide opportunities to review current research and practice issues. *(Fall)*

NURS 6486. Nurse Anesthesia Clinical Residency II. (4G) Prerequisite: NURS 6485. Continuation of clinical practice following NURS 6485 with focus on utilization of additional anesthesia techniques and increased skill development. *(Spring)*

NURS 6487. Nurse Anesthesia Clinical Residency III. (4G) Prerequisite: NURS 6486. Continuation of clinical practice following NURS 6486. *(Summer)*

NURS 6488. Advanced Administration Practicum. (5G) Prerequisite: completion of all other required courses. The capstone course of the specialization area in Nursing Administration. Students demonstrate theory and practice in the field under the guidance of selected administrative preceptors. *(Fall, Spring)*

NURS 6489. Nurse Anesthesia Clinical Residency IV. (6G) Prerequisite: NURS 6487. Clinical practice of all didactic material acquired in the nurse anesthesia curriculum with opportunities to synthesize content and practice effectively and efficiently. *(Fall)*

NURS 6651. Nursing Anesthesia Seminar. (1G) Prerequisites: NURS 6125 and 64887. Evaluation of current anesthesia techniques and practices including discussion of recent legal and ethical issues as they relate to patient care during preoperative, intra-operative and/or postoperative phases. *(Fall)*

NURS 6661. Research Seminar. (2G) Prerequisite: NURS 6160 and graduate statistics course. Application of inquiry methods to nursing problems including systematic observation and critical analysis of research methods. Submission of a written research or project proposal is required. *(On demand)*

NURS 6895. Independent Study. (1-2-3G) Guided individual study in topics or issues related to nursing arranged with a faculty adviser. May be repeated for credit. No more than six hours of topics and/or independent study courses credit in nursing. *(Fall, Spring)*

NURS 6962. Thesis. (1-2-3G) Prerequisite: NURS 6160. Production of a piece of nursing research or investigation of a problem relevant to nursing which demonstrates contribution to professional knowledge through systematic investigation and participation in the process of peer review of research. *(Fall, Spring)*

Psychology

Degree: M.A.

Clinical/Community Coordinator: C.D. Fernald
Industrial/Organizational Coordinator: David C. Gilmore

MASTER OF ARTS DEGREE IN PSYCHOLOGY

The objective of the M.A. degree program in psychology is to train psychologists in the knowledge and skills necessary to address problems encountered in industry and urban living. The program provides a firm foundation in the research methods and content of basic psychology as well as training in the applied skills of professional practice. An extensive practicum component utilizes the Charlotte area as a setting for applied experience. The relatively small, competitively-selected student body receives individual attention from faculty members who maintain rigorous standards of academic excellence. The program prepares students for the North Carolina psychology licensure examination and for positions in diverse settings such as community mental health centers and personnel or training departments.

Degree Requirements. Students must choose from two areas of concentration—Clinical/Community or Industrial/Organizational. Both programs require a minimum of 48 semester hours of graduate coursework. Six hours may be transferred from another accredited institution or other UNC Charlotte disciplines.

A core of 14 semester hours of courses in basic knowledge and methods in psychology is required of students in both concentrations. This core includes the following:

PSYC 6102	Research Design and Quantitative Methods in Psychology (3G)
PSYC 6107	Ethical and Professional Issues in Psychology (2G)
PSYC 7999	Thesis (3G)

Two general psychology courses (6 hours) must be selected from the following:

PSYC 6010	Topics in Learning and Cognition (3G)
PSYC 6015	Topics in Perception and Physiological Psychology (3G)
PSYC 6020	Topics in Developmental Psychology (3G) or
PSYC 6030	Topics in Social Psychology and Personality (3G)

In addition, all students are required to successfully complete a comprehensive examination covering the core and the area of concentration. Automatic termination will result if the student fails the comprehensive exam twice, or receives three grades of *C* or one *Unsatisfactory* grade during his or her graduate career. The faculty will conduct a thorough review of student performance on a regular basis. Continuation in the program is contingent upon a favorable review during these evaluations. Students who consistently show borderline course performance, who are not developing good applied skills in the practice of psychology, who fail to complete coursework on a timely basis, or who otherwise perform unprofessionally or unsatisfactorily, may be required to complete additional courses or practicum work, or may be terminated from the program.

Clinical/Community

Students selecting this concentration will develop knowledge and skill in psychological assessment; learn various treatment and intervention strategies; and work with a variety of populations in evaluation, research and consultation. The following coursework is required:

PSYC 6050	Topics in Psychological Treatment (3G)
PSYC 6141 + L	Intellectual Assessment (4G)
PSYC 6142 + L	Personality Assessment (4G)
PSYC 6145	Applied Research Design and Program Evaluation (3G)
PSYC 6150 + L	Introduction to Psychological Treatment (4G)
PSYC 6151 + L	Behavior Disorders (4G)
PSYC 6155	Community Psychology (3G)
PSYC 6450	Practicum in Clinical Psychology (6G) *or* PSYC 6450 (3G) *and* PSYC 6455, Practicum in Community Psychology (3G)

An additional three hours will be selected as elective hours with the approval of the student's academic adviser. Hours beyond the 48 hours may be required for an individual student's program, as determined by the recommendation of the academic adviser and the approval of the Clinical/Community Program Committee.

Industrial/Organizational

Students selecting this concentration will develop knowledge and skills to deal with problems of people at work. Among the issues to be studied will be personnel selection, design and evaluation of various types of programs including those aimed at training employees, increasing performance, reducing conflict and enhancing job satisfaction. The following coursework is required:

PSYC 6140	Psychological Measurements and Evaluation (3G)
PSYC 6171	Industrial/Organizational Psychology (3G)
PSYC 6171L	Laboratory in Industrial/Organizational Psychology (1G)
PSYC 6172	Personnel I (3G)
PSYC 6174	Organizational Dynamics I (3G)
PSYC 6175	Organizational Dynamics II (3G)
PSYC 6177	Personnel II (3G)
PSYC 6477	Projects in Industrial/Organizational Psychology (3G)

Students in the Industrial/Organizational Psychology concentration are strongly encouraged to take six hours of PSYC 6477 (Projects in I/O Psychology). An additional 12 hours of elective courses will be selected with the approval of the student's academic adviser. Hours beyond the 48 hours may be required for an individual student's program, as determined by the recommendation of the student's academic adviser and the approval of the Industrial/Organizational Program Committee.

PSYCHOLOGY (PSYC) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

PSYC 4140. Tests and Measurements. (3)(3G) Prerequisites: PSYC 1101. Psychological and educational measurements in current use with emphasis on structure, administration and application of group tests. Individual tests such as Stanford-Binet, WISC and WAIS will be reviewed. *(Alternate years)*

PSYC 5006. Selected Topics in Psychology. (3)(3G) Prerequisites: junior, senior or graduate standing. Examination of special psychological topics. *(On demand)*

PSYC 5152. Psychology of Exceptional Children. (3)(3G) Assessing and treating the exceptional child. Emphasis on current research in several diagnostic categories, including the emotionally disturbed, learning disabled, mentally retarded, physically handicapped and gifted. *(Alternate years)*

PSYC 5153. Psychology of Mental Retardation. (3)(3G) Psychological and sociological aspects of mental retardation in relation to adjustment and educational development. Emphasis on current research and diagnostic categories. *(Alternate years)*

Courses for Graduate Students Only
Permission of the Department required for enrollment in these courses:

PSYC 6010 Topics in Learning and Cognition. (3G) An examination of selected topics in the areas of learning, memory and cognition, and behavior modification, with an emphasis on the applications to the areas of clinical, community and industrial psychology. May be repeated for credit with the permission of the department. *(Alternate years)*

PSYC 6015. Topics in Perception and Physiological Psychology. (3G) An examination of selected topics in the areas of sensation and perception, physiological and neuropsychology, with an emphasis on the applications to the areas of clinical, community, and industrial psychology. May be repeated for credit with the permission of the department. *(Alternate years)*

PSYC 6020. Topics in Developmental Psychology. (G) An examination of selected topics in child and adult development, aging, and developmental disabilities, with an emphasis on the applications to the areas of clinical, community, and industrial psychology. May be repeated for credit with the permission of the department. *(Alternate years)*

PSYC 6030. Topics in Social Psychology and Personality. (3G) An examination of selected topics in personality and social psychology, with an emphasis on the applications to the areas of clinical, community, and industrial psychology. May be repeated for credit with the permission of the department. *(Alternate years)*

PSYC 6050. Topics in Psychological Treatment. (3G) Prerequisite: PSYC 6151. A topical course which will focus on issues in treatment, alternative treatment perspectives, special client populations. May be repeated for credit with departmental permission. *(Yearly)*

PSYC 6099. Topics in Psychology. (3G) A discussion of selected topics in psychology. *(On demand)*

PSYC 6102. Research Design and Quantitative Methods in Psychology. (3G) Prerequisites: MATH 1222 and PSYC 2102 or equivalent. Experimental and correlational methods of psychological research, including single subject designs with emphasis on research design and the application of statistical methods to psychological research. *(Fall)*

PSYC 6107. Ethical and Professional Issues in Psychology. (2G) Roles and responsibilities of psychologists, including ethical standards in professional practice, testing and research; expectations and problems confronting psychologists in industrial, clinical and professional organizations. *(Fall)*

PSYC 6111. Psychology of Learning and Memory. (3G) Principles, theories and current research in learning with emphasis on human learning and memory. *(On demand)*

PSYC 6112. Applied Behavior Analysis. (3G) Use of behavior principles in applied settings. Topics include: behavioral assessment, positive and negative reinforcement, punishment, extinction, stimulus control, maintenance and generalization of behavior change. Each student will design and carry out a behavior change project. *(On demand)*

PSYC 6113. Physiological Psychology. (3G) The relationships between the nervous system and behavior. Topics include the structure of the nervous system and nerve conduction, the functional organization of the central nervous system, neuronal and hormonal control of behavior, biofeedback and other appropriate topics. *(On demand)*

PSYC 6115. Sensation and Perception. (3G) Processes involved in receiving and interpreting sensory data including all the sensory systems with an emphasis on vision. *(On demand)*

PSYC 6120. Developmental Psychology. (3G) Psychological development across the lifespan. *(On demand)*

PSYC 6124. Psychology of Aging. (3G) Psychology of aging with particular emphasis on issues related to community/clinical psychology and industrial/organizational psychology. Topics include myths and stereotypes about aging, problems faced by older workers, retirement, mental health and normal aging, counseling the older adult, and psychological disorders in later life. *(On demand)*

PSYC 6130. Social Psychology. (3G) Human social behavior; topics include affiliation, person perception, conformity and attitudes. *(On demand)*

PSYC 6135. Psychology of Personality. (3G) A critical evaluation of major personality theories including an extensive survey of current research. *(On demand)*

PSYC 6140. Psychological Measurement and Evaluation. (3G) Prerequisite: PSYC 6102. Measurement of psychological characteristics; scaling, reliability, validity and norms; construction and use of the intelligence tests, personality inventories, interest tests, attitude scales, etc., interviewing, survey techniques and behavioral assessment. *(Spring)*

PSYC 6141. Intellectual Assessment. (4G) Theories of intelligence and methods of intellectual assessment, including practice in administering intelligence tests, interpreting results, and writing evaluation reports. Three lecture hours and one two-hour lab per week. *(Fall)*

PSYC 6142. Personality Assessment. (4G) Prerequisite: PSYC 6151, 6141 or permission of the Department. Theories and methods used in the assessment of personality and psychopathology, including practice in administering personality tests, interpreting results and writing evaluation reports. Three lecture hours and one two hour lab per week. *(Spring)*

PSYC 6145. Applied Research Design and Program Evaluation. (3G) Prerequisite: PSYC 6102. Models of evaluative research; also techniques, designs and administration of program evaluation. Topics include role conflicts, entry issues, goal setting, research for program planning and implementation and examples of actual program design and evaluation. *(Spring)*

PSYC 6150. Introduction to Psychological Treatment. (4G) Prerequisite: PSYC 6151. Major approaches to psychological intervention, including psychodynamic, behavioral, humanistic and cognitive-behavioral systems. Emphasis on practical therapy considerations, including crisis intervention, client behaviors at various stages of therapy, handling difficult clients and ethical and professional issues. Three lecture hours and one two-hour lab per week. *(Spring)*

PSYC 6151. Behavior Disorders. (4G) Diagnostic systems in current use and the implications of these systems for psychologists; several perspectives on psychological processes, behavior disorders and diagnosis including psychodynamic, behavioral and social models; practice in diagnostic interviewing. Three lecture hours and one two-hour lab per week. *(Fall)*

PSYC 6155. Community Psychology. (3G) Research, intervention techniques and settings associated with major approaches in community psychology including the mental health, organizational, ecological and social action models. *(Fall)*

PSYC 6171. Industrial/Organizational Psychology. (3G) Human behavior within organizations. Topics include personnel selection and placement, job analysis, motivation, satisfaction, consumer psychology and ergonomics. *(Fall)*

PSYC 6171L. Laboratory in Industrial/Organizational Psychology. (1G) Corequisite: PSYC 6171. Practice in administration and scoring of surveys and tests. Experience in role plays, training practices, and interviews. *(Fall)*

PSYC 6172. Personnel I. (3G) Prerequisite or corequisite: PSYC 6171, 6140. Techniques of applied personnel psychology. Topics include job analysis, testing in industry, interviews, personality measures, assessment centers, job evaluation, and polygraphs. *(Spring)*

PSYC 6173. Individual Dynamics. (3G) The individual within the organization. Special emphasis on theories of motivation and job satisfaction. *(On demand)*

PSYC 6174. Organizational Dynamics I. (3G) Prerequisite: PSYC 6171. Group processes, including group formation, group decision making, leadership and group structure. *(Spring)*

PSYC 6175. Organizational Dynamics II. (3G) Prerequisite: PSYC 6174. Organization theories and organizational change methods. *(Fall)*

PSYC 6176. Counseling Psychology in Organizations. (3G) Application of psychology to special problems within the organization, especially the counseling of employees experiencing life problems: for example, retirement, alcoholism, interpersonal conflict. *(On demand)*

PSYC 6177. Personnel II. (3G) Prerequisite: PSYC 6172. Theoretical bases of personnel psychology. Topics include performance appraisal, legal issues, personnel strategies, validation issues, utility analysis, human resource planning and training. *(Fall)*

PSYC 6450. Practicum in Clinical Psychology. (1-3G) Prerequisites: PSYC 6150 and permission of the Department. Experience in clinical assessment and/or psychotherapy with clients at local agencies under supervision from a faculty member on campus. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

PSYC 6455. Practicum in Community Psychology. (1-3G) Applications of the principles of community psychology to special problems within an organization or community setting. The project might include, but would not be limited to, consultation, program development, training, community education or program evaluation. May be repeated for credit with departmental approval. *(Fall, Spring)*

PSYC 6477. Projects in Industrial/Organizational Psychology. (1-3G) Prerequisite: PSYC 6171. A structured practicum experience or research paper in industrial/organizational psychology. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

PSYC 6899. Readings and Research in Psychology. (1-4G) Prerequisite: permission of instructor and Department to be obtained in the semester preceding the semester in which the course is to be taken. Individual study in psychology which may take the form of conducting empirical research or formulating a critique and synthesis of existing research. May be repeated for credit. *(Fall, Spring, Summer)*

PSYC 7999. Thesis. (1-3G) The thesis is coordinated with the student's interests and practical experience during the second year to allow the development of an area of specialization. Thesis projects can be of three types: (1) An original experiment that will contribute to the psychological literature; (2) a thorough case analysis including literature review and application; (3) the development of a community psychology program or intervention to accomplish an important, well-defined goal. A completed paper and oral presentation are required. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

Public Administration

Degree: M.P.A. *Coordinator:* To Be Named

MASTER OF PUBLIC ADMINISTRATION

The primary objective of the Master of Public Administration (M.P.A.) degree program is to provide a curriculum which offers professional training in public administration. The curriculum emphasizes the analysis of the political and administrative environment as well as the administrative decision-making approaches of public administration.

Degree Requirements. The Master of Public Administration program is structured into three distinct phases: I. Core; II. Advanced Work; and III. Directed Study. In all, the program requires 37 hours of graduate credit for completion of the degree.

I. Core: All students are required to complete: 22 hours in core areas as defined by the program. The emphasis in the core is twofold: achieving an overall perspective on the problems of public administration *and* comprehending the various managerial and analytical approaches salient to the environment of public administration.

After completion of the core requirements each student must successfully complete a comprehensive examination.

II. Advanced Courses: The MPA program offers a number of advanced courses in areas of importance to public administrators including application of analytic tools and understanding of public administration processes. With the approval of an adviser, students may elect to take advanced work with other departments.

III. Directed Study: Each master's degree candidate is expected to complete a project on a topic of significance based on a field experience in public administration. This requirement can be satisfied by individual experience gained through professional involvement in public administration or experience obtained through an approved internship with a governmental unit.

Program Instruction and Scheduling. The methods of instruction employed in the program are designed to expose students to a variety of approaches to public management. These methods include simulations, role playing, problem analysis, lectures and case studies. The ability to analyze complex managerial problems can be developed only by combining theoretical principles and practical administrative experience. The instructional program is designed to expose the student to both principles and experience.

Students may enroll in the Master of Public Administration program on either a full-time or part-time basis. Classes are scheduled in the evening throughout the year. Full-time students may carry more than a normal course load only with permission of their advisers.

PUBLIC ADMINISTRATION: POLITICAL SCIENCE (MPAD)COURSE DESCRIPTIONS

MPAD 6000. Topics for Graduate Study in Public Administration. (1-4G) Intensive study of a topic in public administration. The topic of investigation may vary from semester to semester. May be repeated for credit. *(On demand)*

MPAD 6103. Political Foundations of Public Administration. (3G) Consideration of the political context of contemporary public administration, with attention to the role of administration in the policy process, the legal basis for public administration, legislative-executive relations, and accountability and responsibility in democratic administration. *(Fall) (Evenings)*

MPAD 6106. Introduction to Urban Administration. (3G) An introduction to the basic literature of public administration and consideration of theoretical questions of administration as an independent field of study and practice, particularly as applied to an urban setting. *(On demand) (Evenings)*

MPAD 6113. Organization Theory and Human Behavior in Public Organizations. (3G) Changing images of people, organizations and organizational environments; research findings and applications related to motivation, leadership, communications, decision-making, group dynamics, interpersonal skills, group problem solving skills; ethics and values. *(Fall) (Evenings)*

MPAD 6114. Changing the Public Organization. (3G) Overview of concepts and methodologies of organization development, diagnosing organizational needs, change strategies and interventions. *(On demand) (Evenings)*

MPAD 6120. Public Values in Organizational Context. (3G) Prerequisite: completion of two courses in the MPA program or permission of the instructor. Normative and value considerations important to the study and practice of organizational leadership, ethical systems, and assessment of value systems and the impact of competing value systems on public and organizational policy making. *(Fall) (Evenings)*

MPAD 6125. Quantitative Research Methods in Public Administration. (3G) Corequisite: MPAD 6125L. Introduction to the use of quantitative analysis in administration. Special emphasis on issues of research design, data collection, elementary statistical analysis, and the interpretation and presentation of research findings. *(Fall) (Evenings)*

MPAD 6125L. Computer Laboratory In Quantitative Research Methods in Public Administration. (1G) Corequisite: MPAD 6125. Hands-on computer experience to master the substantive materials taught in Quantitative Research Methods. *(Fall) (Evenings)*

MPAD 6128. Public Policy Analysis and Program Evaluation. (3G) Analysis of the policy making process with particular attention to the role of public administration. Development and application of policy analysis methods, methods of evaluation, research design and measurement, and methods to incorporate program evaluation with planning, budgeting and personnel management. *(Spring) (Evenings)*

MPAD 6131. Public Budgeting and Finance. (3G) (Note: this course combines former POLS 6130 and 6132). An introduction to the basics of public finance and an examination of the theory and practice of public budgeting. Topics to be addressed in this course include: the history and development of public budgeting, the budget processes, the budget cycle, budget reforms, capital budgets, revenue sources, taxation policies and processes, intergovernmental fiscal relations and governmental accounting practices, debt management and cash management in public organizations. *(Fall) (Evenings)*

MPAD 6134. Public Personnel Management (3G) Study of the context of public personnel administration; basic functions of job evaluation and compensation, employee rights and responsibilities; the legal constraints including equal opportunity, health and safety, collective bargaining; government productivity. *(Fall) (Evenings)*

MPAD 6140. Labor Management Relations in Government. (3G) Public employee unionization, collective bargaining, unit determination and recognition; negotiation; third-party process; administration of agreements. *(On demand) (Evenings)*

MPAD 6141. Conflict Management in Public Organization. (3G) The role of the administrator as a focal point in social change and the management of the conflict which occurs. Perspectives on the negotiation and bargaining process will be reviewed. *(On demand) (Evenings)*

MPAD 6160. Information Systems in Public Administration. (3G) A discussion of the nature of information systems in urban administration. Particular attention to developing understanding of administrative control and use of technology, and the processes, policies and issues associated with public information systems. *(On demand) (Evenings)*

MPAD 6170. Law and Urban Policy. (3G) Role of the judicial process in shaping urban policy and the role of administrative law in influencing behavior of urban policy organizations. *(On demand) (Evenings)*

MPAD 6172. Administration of the Health Care Systems in the United States. (3G) Components of the health care system in the United States, with emphasis on the relationsips among public (local, state and federal), private, voluntary and nonprofit entities; including points of access for recipients of health care; relationships with other human services and professions involved in providing health care; and the regulatory environment governing these relationships. *(On demand)*

MPAD 6174. Public Policy and Politics in Health Care Administration. (3G) Examination of the formulation, adoption and implementation of public policy for health care through federal, state and local political processes. *(On demand)*

MPAD 6176. Trends and Issues in Health Administration. (3G) Prerequisite: MPAD 6170 or MPAD 6172. Examination of current issues confronting health care managers and an assessment of current programs and management responses to emerging trends in the health care field, including delivery systems, marketing/competition, strategic planning, financial management and/or epidemiological changes. *(On demand)*

MPAD 6185. Intergovernmental Relations. (3G) Survey of the complex relationships of governments in an urban environment set in the federal system. A review of the problems created by that system and the approaches to their solutions. *(On demand) (Evenings)*

MPAD 6187. Advanced Seminar in Public Management Problem Solving. (3G) Seminar viewed as a capstone to the student's coursework in public management and is required to be taken by all students. Seminar devoted to topics in public management which involve problem identification and solution. *(Fall) (Evening)*

MPAD 6195. Robert A. Taft Institute of Government. (3G) Open under special arrangement on a *Pass/No Credit* basis. *(Summer only)*

MPAD 6196. Urban Systems for School Administrators. (3G) Corequisite: HIST 6196. An interdepartmental, team-taught course which consists of a survey of the courses and consequences of urbanization in the United States with particular attention to the urban South. Urbanization is treated as a system linking historic, political, economic and social factors, particularly since 1945. *(Summer)*

MPAD 6800-6801. Directed Study in Public Administration. (G) Individual project report on a directed topic of significance based on field experience in public administration. *Pass/No Credit* grading. *(Fall, Spring) (Evenings)*

Sociology

Degree: M.A. *Coordinator:* Raymond Michalowski

MASTER OF ARTS DEGREE IN SOCIOLOGY

The Master of Arts degree in sociology provides students with the theoretical and methodological skills necessary to undertake systems-level analysis of contemporary social issues and problems. The program is designed to accommodate both full-time and part-time graduate students. Courses are held in the evening to serve students who are currently employed and wish to enhance job-related analytical and research skills.

Students may choose a concentration in either Applied Social Research or General Sociology. The concentration in Applied Social Research is designed to meet the needs of students seeking master's level research skills as preparation for entering or advancing in occupations requiring social research skills. The concentration in General Sociology provides a broad-based master's level education in sociology for students preparing for further graduate study, high school education, and other occupations which require an understanding of social problems. A thesis is required for completion of either concentration.

In addition to taking traditional classroom courses, students can tailor their curriculum in accordance with specific areas of interest through individualized tutorials. These tutorials will involve directed reading and/or research in an area of substantive interest supervised on a one-to-one basis by a faculty member with a specialization in that area.

Degree Requirements. Both concentrations require 36 semester hours of coursework, comprising a 0-credit professional seminar, nine semester hours of common core courses, 21 semester hours in either the Applied Social Research or the General Sociology concentration, and six semester hours of thesis credit. The 21 semester hours in each concentration includes six semester hours in required courses specific to that concentration. Of the total 36 required semester hours, 27 must be taken in courses open only to graduate students. Students may transfer up to six semester hours of graduate work for which the applicant received a grade of *B* or better from another accredited institution or related UNC Charlotte program with departmental approval.

Core Courses. The objective of the required core courses is to provide all students with a solid grounding in the theory and methods of sociological inquiry. The core curriculum common to all master's of sociology candidates consists of: SOCY 6651—Continuity and Change (3), SOCY 6652—Issues in Social Research (3), and SOCY 6653—Advanced Quantitative Analysis (3).

Applied Social Research. The Applied Social Research concentration further develops research skills with particular attention to the skills necessary in non-academic settings, and enables the student to apply these skills to a particular area of specialization such as health care delivery systems, aging, family, legal institutions, labor issues or other topics of interest. Students in the Applied Social Research concentration must complete SOCY 6615—Dilemmas in Organization (3) and SOCY 6617—Data Utilization (3). The remaining 21 hours of the concentration will be devoted to coursework in one or more substantive areas of applied research and will include a minimum of six semester hours each in SOCY 6895—Tutorial in Sociology (1-4; can be repeated for credit) and SOCY 6996—Thesis (1-6).

General Sociology. The concentration in General Sociology develops a comprehensive overview of the substantive areas of sociology. Students in this concentration must complete SOCY 6614—Self and Society (3) and SOCY 6616—Stratification and Inequality (3). The remaining 21 semester hours of the General Sociology concentration will consist of coursework in the various substantive areas

of sociology including a minimum of six semester hours each in SOCY 6895—Tutorial in Sociology (1-4; can be repeated for credit) and SOCY 6996—Thesis (1-6).

Admission to Candidacy. Candidates for admission to the Master of Arts degree in Sociology program must meet all requirements for admission to the Graduate School of The University of North Carolina at Charlotte. In addition, applicants should have:

1.) an overall undergraduate grade point average of 3.0 or better on a 4.0 scale;
2.) a score of 50th percentile or better on the Aptitude Portion of the Graduate Record Examination;
3.) completed a minimum of 18 hours of undergraduate coursework in social sciences.
4.) Demonstrated undergraduate competence in methods and statistics for social research.

Applicants who fall below one of these criteria and otherwise appear as promising candidates may be admitted on a provisional staatus by recommendation of the Graduate Committee of the Department.

SOCIOLOGY (SOCY) COURSE DESCRIPTIONS

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. Additional work required of students receiving graduate credit. See pages 190-192 for complete course descriptions.

SOCY 4090. Topics in Sociology. (1-3) (1-3G)
SOCY 4110. Sociology of Aging. (3) (3G)
SOCY 4111. Social Inequality. (3) (3G)
SOCY 4112. Industrial Sociology. (3) (3G)
SOCY 4115. Complex Organizations. (3) (3G)
SOCY 4122. Population and Society. (3) (3G)
SOCY 4124. Sociology of the Community. (3) (3G)
SOCY 4130. Sociology of Health and Illness. (3) (3G)
SOCY 4132. Sociology of Sport. (3) (3G)
SOCY 4135. Sociology of Education. (3) (3G)
SOCY 4154. Theory Construction. (3) (3G)
SOCY 4155. Sociological Research Methods. (4) (4G)
SOCY 4161. Socialization and Society. (3) (3G)
SOCY 4163. Sociology of Sex Roles. (3) (3G)
SOCY 4172. Sociology of Deviant Behavior. (3) (3G)
SOCY 4173. Juvenile Delinquency. (3) (3G)
SOCY 4261. Human Sexuality. (3) (3G)
SOCY 4263. Sociology of Small Groups. (3) (3G)
SOCY 4620. Seminar in the Sociology of Housing. (3) (3G)
SOCY 4631. Seminar in Family Violence. (3) (3G)
SOCY 4632. Changing American Family. (3) (3G)
SOCY 4656. Seminar in Sociological Research. (W) (3) (3G)
SOCY 4895. Directed Individual Study. (1-4) (1-4G)

Courses for Graduate Students and Advanced Undergraduates

SOCY 5110. Intergroup Relations. (3) (3G) Prerequisite: SOCY 1101 or consent of Department. Social and social-psychological determinants of intergroup relations; labor-management relations, race relations, social classes, ethnic, national and religious groups. *(On demand)*

SOCY 5625. Seminar in Urban Sociology. (3) (3G) Prerequisite: SOCY 1101 or consent of Department. Development and change of urban societies utilizing cross-cultural comparisons of social organization, ecology, demographic composition, social psychological attributes and social problems. *(On demand)*

Courses for Graduate Students Only

SOCY 6090. Topics in Sociology. (3G) Prerequisite: consent of Department. Intensive treatment of a topic or survey of related topics, depending on student needs and interests. May be repeated for credit as topics vary. *(On demand)*

SOCY 6614. Self and Society. (3G) Examination of theoretical constructs and substantive concerns relevant to the socialization process; comparison of symbolic interactionism, ethnomethodology, phenomenology; emphasis on social construction of reality in various "social worlds" (deviant, work, family). *(Alternate years)*

SOCY 6615. Dilemmas in Organizations. (3G) Organizational theory and research focused on organizational design, intervention in organizations, and productivity. *(Alternate years)*

SOCY 6616. Stratification and Inequality. (3G) Examination of theories of stratification and the causes, processes and social consequences of economic and political inequality; assumptions behind, mechanisms for, and consequences of government and private sector strategies to address problems associated with inequality. *(Alternate years)*

SOCY 6617. Data Utilization. (3G) Methodological and statistical strategies for applied sociological research within organizational settings; selecting the best strategies consistent with budgetary, manpower and organizational constraints; interpreting and communicating research results in ways understandable to and useful for organizational decision-makers. *(Alternate years)*

SOCY 6651. Continuity and Change. (3G) Analysis of contemporary social theories, with emphasis on their implications for planned change. *(Yearly)*

SOCY 6652. Issues in Social Research. (3G) Examination of epistemology of social research; assumptions and methods of specific research strategies; ethical and policy issues of applied and academic research. *(Alternate years)*

SOCY 6653. Advanced Quantitative Analysis. (3G) Prerequisites: six hours in Introductory Statistics and/or Research Methods. Contemporary techniques of data analysis, management and processing applied to specific topics; measurement models, data reduction strategies and multivariate procedures. *(Alternate years)*

SOCY 6895. Tutorial in Sociology. (1-4G) Prerequisite: permission of instructor. Directed reading and/or research; development of expertise in substantive area. May be repeated for credit. *(Fall, Spring, Summer)*

SOCY 6996. Thesis. (1-6G) Prerequisites: completion of all other coursework and admission to candidacy by Graduate Committee. Applied, academic, or theoretical research project, defended before graduate faculty. May be repeated for credit up to six hours. *(Fall, Spring, Summer)*

The Microelectronics Program

Coordinator: Edward H. Nicollian

The Microelectronics Program provides an opportunity for graduate-level studies and research in microelectronics at both the master's and doctoral level. Graduate courses available at UNC Charlotte cover the entire spectrum of microelectronics ranging from electronic materials and device physics at one end of the spectrum through VLSI design and design tools to microelectronics systems at the other end. Additional coursework is available via the Microelectronics Center of North Carolina (MCNC) telecommunications network linking UNCC to other educational institutions participating in MCNC.

Areas of research include solid state devices and materials, integrated circuit processing, analog and digital circuits, artificial intelligence, and vision. The MCNC Central Laboratory has state-of-the-art design and fabrication facilities to support research activities related to microelectronics. Facilities at UNCC include a solid state and semiconductor device physics laboratory, a complete integrated circuit fabrication laboratory, an electrical measurements laboratory, an integrated circuit design facility, and vision and AI laboratories.

Microelectronics students in the College of Engineering or the College of Arts and Sciences may major in one of four departments: Electrical Engineering, Mechanical Engineering and Engineering Science, Computer Science, or Chemistry depending on their particular interest and background in microelectronics. Several typical programs of study toward a master's degree are listed below, but the actual plan of study will be determined by the student's background, interest, and advisory committee.

MASTER'S DEGREE PROGRAMS AND REQUIREMENTS

Materials and Fabrication

	Semester Hours
Microelectronics Processing and Fabrication I	3
Microelectronics Processing and Fabrication II	3
Solid State Theory	3
Atomic Processes in Solids	3
Device Electronics for Integrated Circuits	3
Technical Elective	3
Advanced Engineering Mathematics I	3
Advanced Engineering Mathematics II	3
Thesis	6
	30

Solid State Electronics

VLSI Systems Design	3
Device Electronics for Integrated Circuits	3
Advanced Semiconductor Device Physics	3
MOS Physics and Technology	3
Microelectronics Processing and Fabrication I	3
Technical Elective	3
Advanced Engineering Mathematics I	3
Advanced Engineering Mathematics II	3
Thesis	6
	30

Integrated Circuit Design and Testing

Semester Hours

VLSI Systems Design	3
Advanced VLSI Systems Design	3
Device Electronics for Integrated Circuits	3
Advanced Microprocessor-based Design	3
Fault Testable Hardware Design	3
Technical Elective	3
Advanced Engineering Mathematics I	3
Advanced Engineering Mathematics II	3
Thesis	6
	30

Software Aspects of VLSI Design

Computational Aspects of VLSI	3
VLSI Design Tools	3
Computer Arithmetic	3
Advanced Computer Architecture	3
Data Base Systems Design and Management	3
Software Systems Design and Implementation	3
VLSI Systems Design	3
Technical Elective	3
Thesis	6
	30

The technical electives may include courses in the departments of Engineering, Computer Science, Physics, Chemistry, and Mathematics.

Students holding undergraduate degrees in Chemistry may emphasize materials and processing or sensors and instrumental design for the M.S. degree in Chemistry. The M.S. degree in Chemistry is a research-based degree with a thesis required. The thesis research must be in the area of microelectronics to attain the microelectronics emphasis. For a complete description of the requirements for the M.S. degree in Chemistry, see page 333 of this *Catalog*. A typical materials and processing program for a student with an American Chemical Society-certified Bachelor of Science degree in Chemistry is presented below:

Chemistry

Microelectronics Processing and Fabrication I	3
Solid State Theory	3
CHEM 6681	1
CHEM 6682	1
CHEM (6115, 6125, 6135, 6146—any two)	6
CHEM 6900 Research and Thesis	1 to 16

For details and possible changes in requirements, students should contact the individual department.

COOPERATIVE PH.D. PROGRAM IN ENGINEERING

The College of Engineering at UNCC has a cooperative arrangement with North Carolina State University to permit Ph.D. degree candidates located in Charlotte to be enrolled in the Ph.D. program at North Carolina State University. A major feature of this program is that most of the coursework and the dissertation research will be carried out at UNCC. Qualified students in the microelectronics program may be recommended for this cooperative program. In addition to the courses available at UNCC, selected doctoral-level courses from other participating institutions are available via the MCNC telecommunications network. See page 310 for complete information on admissions and degree requirements.

MICROELECTRONICS COURSE DESCRIPTIONS

Descriptions of those courses indicated in the preceding typical programs are listed in the various departmental listings except for the following which are now available as special topics courses.

Microelectronics Processing and Fabrication I. Historical introduction; review of strategies in VLSI fabrication; review of chemical and physical concepts; equilibrium phase diagrams; crystal growth, wafer preparation; defect in crystals; semiconductor doping; diffusion and ion implantation; thermal and anodic oxidation of semiconductors. Emphasis on silicon technology although GaAs-based device technology will be introduced.

Microelectronics Processing and Fabrication II. Continuation of MP&F I. Epitaxial growth techniques; film deposition, metallization; etching methods; photolithographic processes, diagnostic techniques, technological considerations for circuit design; assembly techniques.

Solid State Theory. Theories of electrons and phonons in solids. Classical and quantum statistics. Treatment of energy band models. Dispersion relations. Boltzman transport equation. Theories of metals and semiconductors.

Computational Aspects of VLSI. Topics include VLSI models, lower bounds of area and time, layout algorithms, algorithm design for VLSI, systolic algorithms, organizations with high wire area, overview of VLSI design systems, compilation of optimization algorithms, algorithm for VLSI design tools.

VLSI Design Tools. Topics include design data structures, algorithms; VLSI layout, simulation, test pattern generation; silicon compilers, AI techniques; and use of existing design tools including VIVID and MAGIC.

Operations Research

INTERDISCIPLINARY GRADUATE MINOR

The interdisciplinary graduate minor in Operations Research is designed to provide advanced problem solving skills and knowledge in the general areas of operations research and optimization to enable their application to effectively address the present-day problems of business, management science, engineering and computer science. This program prepares students for studies leading to the Ph.D. degree. The required courses are offered by the participating departments of Mathematics, Management Information Systems and Operations Management, Electrical Engineering, Civil Engineering, Mechanical Engineering, Economics and Computer Science.

Admission Requirements. Students admitted to graduate degree programs in the participating departments and the M.B.A. program who are in good standing, are eligible for the minor in Operations Research.

Requirements for the Minor

1. Declaration of the minor, preferably by the end of the first semester of graduate study.
2. Formation of a Program Committee: Students who elect to minor in Operations Research will select a participating faculty member as a member of their regular graduate committee. A list of participating faculty will be available from the coordinator of the minor in Operations Research.
3. Fulfill the requirements of a participative degree program and complete OPRS 6101 and one course each from two of the following areas selected with the advice and knowledge of the student's program committee.

   Mathematics: OPRS 4111, 4112, 4113, 4114, MATH 4165, 7125, 7171 and topics: reliability theory, queueing models, variational methods.

   Computer Science: CSCI 5131, 5150, 6160, 6166

   Management Information Systems and Operations Management: MBAD 6121, 6122, 6141

   Economics: ECON 4100, 4112

   Electrical Engineering: EEGR 6111, 6112, 6115, 6116

   Civil Engineering: CEGR 5090, 6181
4. Students must have a cumulative 3.00 average in courses applied to the minor. Course waivers and transfer credit will be considered on an individual basis.

Other Courses Carrying Graduate Credit

Several departments within the College of Arts and Sciences, the College of Business Administration, and the College of Education and Allied Professions offer courses carrying graduate credit in areas that do not offer a graduate degree program.

Areas of study, listed alphabetically, are: Anthropology (Department of Sociology, Anthropology and Social Work), Communication Studies, Foreign Languages (French, German, and Spanish), Gerontology, Library Science (Department of Curriculum and Instruction), Philosophy, Physics, Political Science, Religious Studies and Women's Studies.

ANTHROPOLOGY (ANTH) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

ANTH 4090. Topics in Anthropology. (1-3) (1-3G)

ANTH 4120. Intercultural Communications. (3) (3G)

ANTH 4121. Culture and Personality. (3) (3G)

ANTH 4140. Primatological Field Observation. (4) (4G)

Courses for Graduate Students Only

ANTH 6112. American Indian Studies Through Curriculum Development. (3G) Cultural descriptions of American Indians by culture area; contact relationships and policies; issues in contemporary Indian affairs presented through lectures, audio-visual materials, workshop activities and field trips. Emphasis on study of American Indian cultures through development of curriculum materials. Designed primarily for public school teachers. *(Summer)*

COMMUNICATION STUDIES (COMM) COURSE DESCRIPTIONS

COMM 4141. Advanced Organizational Communication. (3) (3G) Prerequisite: COMM 3141. Critical examination of the communication practices of organizations which accomplish such tasks as establishing organizational identification influencing organizational members, and making decisions. Includes application of research methods to assess and analyze an organization's communication practices. *(Spring)*

COMM 4145. Public Relations Lab. (3) (3G). Prerequisites: COMM 3145. Lectures, workshops and guest speakers provide knowledge to enable students to research, design, implement, and complete public relations projects for community-based, not-for-profit organizations. The class is structured and run in a manner similar to a professional public relations agency with students assuming appropriate agency roles. May be repeated once. *(Fall, Spring)*

FOREIGN LANGUAGES (FORL) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required of students receiving graduate credit.

FORL 4200. Methods of Teaching a Second Language. (3) (3G)

FORL 4201. Foreign Languages in the Elementary School Methods. (3) (3G)

FORL 4800. Directed Individual Study. (3) (3G)

FRENCH (FREN)

FREN 4003. Studies in French Literature. (3) (3G)

FREN 4005. Studies in the French Language. (3) (3G)

FREN 4007. Studies in French Culture and Civilization. (3) (3G)

FREN 4201. Survey of French Literature I. (3) (3G)

FREN 4202. Survey of French Literature II. (3) (3G)

GERMAN (GERM)

GERM 4010. Periods in the History of German Literature. (3) (3G)

GERM 4020. The Chief Genres in German Literature. (3) (3G)

GERM 4050. Special Topics in German. (1-2-3) (1-2-3G)

GERM 4203. Survey of German Literature I. (3) (3G)

GERM 4204. Survey of German Literature II. (3) (3G)

SPANISH (SPAN)

SPAN 4050. Selected Readings in Spanish. (1-2-3) (1-2-3G)

SPAN 4201. Nineteenth-Century Spanish Literature. (3) (3G)

SPAN 4202. Twentieth-Century Spanish Literature. (3) (3G)

SPAN 4205. Novel of the Golden Age. (3) (3G)

SPAN 4206. Theater of the Golden Age. (3) (3G)

SPAN 4210. Studies in Spanish American Poetry. (3) (3G)

SPAN 4211. Studies in Spanish American Prose Fiction. (3) (3G)

SPAN 4212. Studies in Spanish American Theater. (3) (3G)

SPAN 4213. Don Quijote. (3) (3G)

GERONTOLOGY (GRNT) COURSE DESCRIPTIONS

GRNT 6800. Directed Readings/Research in Gerontology. (3G) Prerequisite: prior written consent of the instructor, of the Gerontology Coordinator, and of the student's academic adviser. Graduate students meet individually or in small groups with the instructor and will be assigned readings and/or research on a topic in Gerontology. Attendance at lectures of an undergraduate class in Gerontology may be included among course requirements. May be repeated for credit up to a maximum of six hours. *(On demand)*

LIBRARY SCIENCE (LSCI) COURSE DESCRIPTIONS

Courses for Graduate Students and Advanced Undergraduates

LSCI 5110. Organization and Administration of the School Media Center. (3) (3G) Acquisition, processing, circulation of materials; student assistance; records and reports; attendance and scheduling; library quarters and equipment, professional relationships, evaluaton of library sciences. *(On demand)*

LSCI 5111. Basic Reference Sources and Materials. (3) (3G) Selection, evaluation and use of basic reference materials. *(On demand)*

LSCI 5112. Reading Guidance and the Selection of Books and Materials for Children. (3) (3G) Survey of the development of children's literature, with study of aids and criteria for selection of books and other materials; principles and objectives of reading guidance for the kindergarten and elementary school pupil. *(On demand)*

LSCI 5113. Reading Guidance and the Selection of Books and Related Material for Young People. (3) (3G) Survey of library materials and principles and objectives of reading guidance, appropriate for the junior high and high school student, with study of aids and criteria for their selection. *(On demand)*

LSCI 5114. Non-Book Materials. (3) (3G) Study of the principles and techniques for the selection, acquisition, organization, circulation and use of non-book materials in the library program. *(On demand)*

PHILOSOPHY (PHIL) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students

PHIL 4050. Topics in Philosophy. (3) (3G)

PHYSICS (PHYS) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

PHYS 4000. Selected Topics in Physics. (0-4) (0-4G)

PHYS 4201. Waves and Optics. (3) (3G)

PHYS 4221. Classical Mechanics I. (3) (3G)

PHYS 4222. Classical Mechanics II. (3) (3G)

PHYS 4231. Electromagnetic Theory I. (3) (3G)

PHYS 4232. Electromagnetic Theory II. (3) (3G)

PHYS 4241. Modern Physics. (3) (3G)

PHYS 4242. Quantum Mechanics. (3) (3G)

PHYS 4251. Thermal Physics. (3) (3G)

PHYS 4261. Nuclear Physics. (3) (3G)

PHYS 4800. Investigations. (0-2) (1-2G)

PHYS 6000. Topics in Physics. (0-4G) Prerequisite: Consent of the department. Selected special topics in physics. May be repeated with approval of the department. *(On demand)*

PHYS 6100. Physical Science for Teachers. (4G) Corequisite: Admission to this class is restricted to in-service teachers. A discovery-oriented course which emphasizes basic physical science principles appropriate for science teachers at all levels and focuses on developing physical science experiments suitable for use by the teachers in their classrooms. Topics include, but are not limited to: states of matter; velocity, acceleration, and force; electricity and magnetism; and waves, sound and light. Six laboratory/lecture hours per week. *(Summer) (On demand)*

POLITICAL SCIENCE (POLS) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

POLS 4800. Independent Study. (1-3) (1-3G)

RELIGIOUS STUDIES (RELS) COURSE DESCRIPTIONS

RELS 6800. Directed Studies. (3G) Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

WOMEN'S STUDIES (WMST) COURSE DESCRIPTIONS

Courses for Advanced Undergraduates and Graduate Students
Additional work required for students receiving graduate credit.

WMST 4101. Applied Research/Field Work. (C) (3) (3G)

WMST 4601. Senior Colloquium. (3) (3G)

Courses for Graduate Students Only

WMST 6800. Directed Reading/Research. (3G) Prerequisite: prior written permission of instructor and Women's Studies Coordinator. Independent investigation of a problem or a topic in Women's Studies, culminating in a research paper or a final report. Student must provide a written plan of work before registering for the course. May be repeated for credit. *(On demand)*

Directory

History of The University of North Carolina

The University of North Carolina is comprised of all the public institutions of higher education in North Carolina that confer degrees at the baccalaureate level or higher. The University was authorized by the State Constitution in 1776, and it was chartered in 1789 by the General Assembly.

The University of North Carolina opened its doors to students at Chapel Hill in 1795. Thereafter, beginning in the latter part of the 19th century, the General Assembly of North Carolina has established and supported 15 other public senior institutions in keeping with Article IX, Section 8, of the Constitution of North Carolina which provides that the "General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise."

By 1969, The University of North Carolina included six constituent institutions, governed by a single Board of Trustees. This multi-campus University had its beginnings in legislation enacted in 1931 that defined The University of North Carolina to include The University of North Carolina at Chapel Hill, North Carolina State University at Raleigh, and The University of North Carolina at Greensboro. In the 1960's three additional campuses were added: The University of North Carolina at Charlotte, The University of North Carolina at Asheville, and The University of North Carolina at Wilmington.

Beginning in 1877, the General Assembly of North Carolina established or acquired 10 additional separately governed state-supported senior institutions of higher education. They are: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University and Winston-Salem State University. Then, in 1971, the General Assembly redefined The University of North Carolina, and under the terms of that legislation all 16 public senior institutions became constituent institutions of The University of North Carolina.

The constitutionally authorized Board of Trustees of the six-campus University of North Carolina was designated the Board of Governors and this body is by law The University of North Carolina.

The Board of Governors consists of 32 members elected by the General Assembly, and it is charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." The chief executive officer of The University is the President.

Each constituent institution of The University has its own faculty and student body. The chief administrative officer of each institution is the chancellor, and the chancellors are responsible to the President.

Each constituent institution also has a board of trustees composed of 13 members: eight elected by the Board of Governors, four appointed by the Governor, and the elected president of the student body *ex officio*. (The School of the Arts has two additional *ex officio* trustees.) The principal powers of these institutional boards are exercised under a delegation of authority from the Board of Governors.

The University of North Carolina
Sixteen Constituent Institutions

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William Mark DeMarcus, B.A. ..... *Director, Athletic Foundation*
Barry Draughon, B.S. ..... *Assistant Ticket Manager*
Jeff Edmonds, B.S. ..... *Assistant Baseball Coach*
Roy R. Fielding, B.A., M.A. ..... *Men's and Women's Swimming Coach*
Andrei Grier, B.A. ..... *Cheerleader Adviser*
David Alan Hall, B.A. ..... *Men's and Women's Cross-Country Coach*
Ruth Carr Helmly, B.S., M.A. ..... *Women's Assistant Basketball Coach*
William Douglas Henry, B.S., M.A. ..... *Director of Pep Band*
Donna Hovis, B.A. ..... *Business Manager*
Tammy Hull, B.A. ..... *Director of Gold Dusters*
Floyd William Kerr, B.A., M.A. ..... *Men's Golf Coach*
Royce Kincaid, B.S. ..... *Assistant Trainer*
Frank D. Kohlenstein, B.S., M.S. ..... *Head Soccer Coach*
Jay D. Matthews, B.A. ..... *Assistant Baseball Coach*
Patti McMillan, B.S., M.Ed. ..... *Athletic/Academic Counselor*
Jeffrey Vincent Mullins, B.A., M.B.A. ..... *Associate Vice Chancellor for Public Service and Men's Head Basketball Coach*
Jessie Myers, B.S. ..... *Assistant Soccer Coach*
Charles David Pendergraft, B.A. ..... *Men's Assistant Basketball Coach*

Gary Linn Robinson, B.A., M.A. ..... *Head Baseball Coach*
Joseph Chip Smith, B.A. ..... *Assistant Athletic Director for Development*
Melvin A. Watkins, B.A. ..... *Men's Assistant Basketball Coach*
Timothy Wetherby, B.A. ..... *Business/Ticket Manager*
Thomas E. Whitestone, B.A. ..... *Sports Information Director*
Bret A. Wood, B.S., M.Ed. ..... *Head Trainer*
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James Kenneth Sanford, A.B., M.A. ..... *Director of Public Information and Publications*
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Samuel F. Nixon, Jr., B.A., M.A. ..... *Information Specialist*
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John Chesser, B.A. ..... *Project Manager, ITRE*
Maxie May ..... *Acting Director, Southeast Waste Exchange*
Jane Begole Miles, B.A., M.U.A. ..... *Community Services Director*
Cheryl R. Roberts, B.A., M.A. ..... *Director of Economic Development and Planning*
Paul Douglas Smith, B.S., M.A. ..... *Regional Information Systems Director*
H.E. Timmerman, B.S. ..... *Executive Director of the Carolinas Transportation Compact*
Roger Sarow, BA., M.S. ..... *Station Manager, WFAE*
Joseph Brant, B.S. ..... *Classical Music Director*
Donna B. Clark, B.A. ..... *Promotion Director*
Kevin Marks, B.A., M.S. ..... *Producer/Reporter*
Kathleen A. Merritt, B.A. ..... *News and Public Affairs Director*
Barbara V. Nail ..... *Overnight Jazz, Programmer/Announcer*
Mark Perzel ..... *Announcer/Producer*
Anthony W. Reevy, B.S., M.S., M.B.A. ..... *Development Director*
Suzanne Stevens, B.A. ..... *Producer/Reporter*
Paul B. Stribling, B.A. ..... *Production Manager/Jazz Producer*

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Crystal Bazemore, B.M.A. ..... *Substance Abuse Coordinator*
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Mayme F. Webb, B.A., M.S. ..... *Associate Director, Cone University Center for Programs*
Vacant ..... *Assistant Director, Campus Programs*
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Arthur A. Kohn, A.B., B.A., M.Ed. ..... *Director, Venture*
Carol DiGregoria, B.S., M.S. ..... *Assistant Director, Venture*
Wayne Maikranz, B.A., M.A. ..... *Student Media Adviser*
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Jacklyn A. Simpson, B.S., M.Ed. ..... *Director, Residence Life*
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Barbara Whaley ..... *Coordinator of Administrative Services*
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Kevin Bailey, B.S., M.A. ..... *Residence Coordinator of Moore Hall*
John Storch, Jr., B.A., M.A. ..... *Residence Coordinator of Holshouser Hall*
Barry McClanahan, B.A., M.A. ..... *Residence Coordinator of Phase V*
Mary Eubanks, B.S., M.A. ..... *Residence Coordinator of Phase VI*

The following persons are employed by various demonimations and churches and are present on campus to serve the spiritual needs of the University community.

Donald S. Rogers, B.A., M.A., B.D. ..... *Baptist*
Barbara Domby, B.A. ..... *Catholic*
Timothy Auman, B.A., M.Div. ..... *Methodist*
William Hinson, Jr. B.A., M.Div. ..... *Episcopal*
John Atkinson, B.A. ..... *Interdenominational*

Faculty

***Indicates appointment to the Graduate Faculty of The University of North Carolina at Charlotte. Certain appointments, promotions and resignations are not included.**

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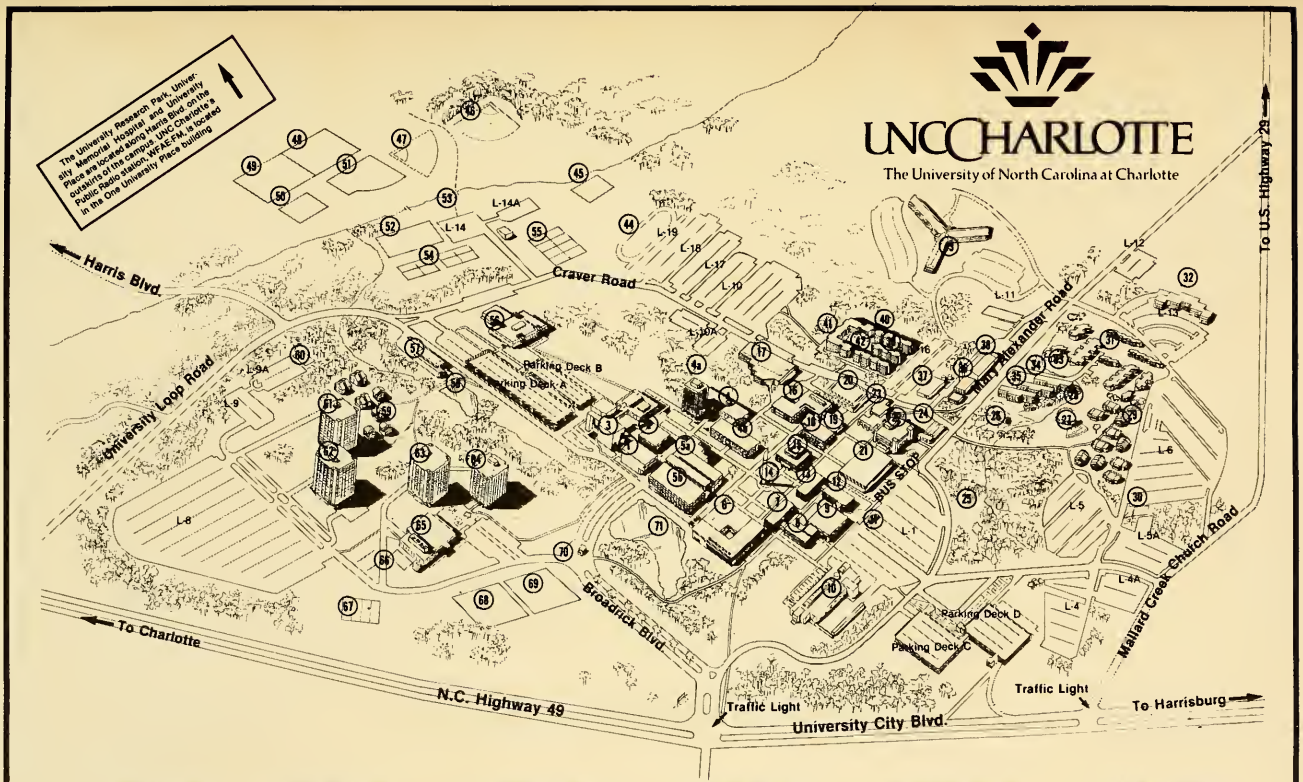

KEY TO CAMPUS FACILITIES

1. Reese Administration Building
2. A.K. King Building
3. Cone University Center
4. Atkins Library
4a. Dalton Library Tower
4b. Atkins Building
5a. Colvard Building North
5b. Colvard Building South
6. Rowe Arts Building
7. Winningham Building
8. Geringer Building
9. Denny Building
10. Architecture Building
11. Automated Bank Tellers
12. Barnard Building
13. Macy Building
14. Belk Tower
15. W.A. Kennedy Building
16. Smith Building
17. Physical Sciences Building
18. Bookstore
19. Bookstore Cafeteria
20. Applied Research Facility
21. Friday Building
22. McEniry Building
23. Auxiliary Services Building
24. McMillen Greenhouse
25. Van Landingham Glen
26. Susie Harwood Garden
27. Amphitheater
28. Cafeteria/Activities Building
29. Martin Village (H-Q)
30. Volleyball Courts
31. Phase III Apartments (R-Z)
32. Hawthorn Residence Hall
33. Cedar Residence Hall
34. Hickory Residence Hall
35. Sycamore Residence Hall
36. Steam Plant
37. Physical Plant Building
38. Receiving Warehouse
39. Maple Residence Hall
40. Pine Residence Hall
41. Oak Residence Hall
42. Elm Residence Hall
43. Phase VI Apartments
44. Track and Intramural Field
45. Archery Range
46. Baseball Field (#1)
47. Softball Field (#2)
48. Soccer and Intramural Field (#4)
49. Intramural Field (#9)
50. Intramural Picnic Area
51. Intramural Field Area (#3)
52. Intramural Field (#5)
53. Fitness Trail
54. Tennis Courts
55. Tennis Courts
56. Physical Education & Athletics Building
57. Brocker Health Center
58. Davis Memorial Park
59. Hunt Village (A-G)
60. Volleyball Courts
61. Holshouser Residence Hall
62. Scott Residence Hall
63. Moore Residence Hall
64. Sanford Residence Hall
65. Residence Hall Cafeteria
66. Volleyball Courts
67. Tennis Courts
68. Intramural Field (#7)
69. Intramural Field (#6)
70. Information Booth
71. Hechenbleiknar Lake

UNIVERSITY PARKING LOTS

L-1, L-4, L-4A, L-5, L-5A, L-6, L-8, L-9, L-9A, L-10, L-10A, L-11, L-12, L-13, L-14, L-14A, L-16, L-17, L-18, L-19

Fourth Class Book Rate

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